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ABSTRACT

Since the secondary facilities are not expected to be built until at least 1975, planning and description cannot be as detailed as they were for the First Facility of the Fort Lincoln New Town (FLNT) education system. In attempting to provide a model for a secondary program this report (Vol. I of 2 Volumes) addresses all the major issues that must be resolved in the specific planning. The report includes a description of relevant social, political, financial and educational factors, a summary of the design process, and characteristics and implementations of the center concept. Also included is a description of the centers, a model for curriculum development, and a discussion of the facility, staffing and community participation requirements. (For related documents see ED 047 171 through ED 047 188.) (LS)

ED 047 184

GENERAL LEARNING CORPORATION
EDUCATIONAL SERVICES DIVISION

AA000 677

GENERAL LEARNING CORPORATION
FORT LINCOLN NEW TOWN

SECONDARY PROGRAM

VOLUME I

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1. INTRODUCTION

1.1 Overview of Secondary Plan

The General Learning Corporation Midterm Report details an elementary education program for the Fort Lincoln New Town to be built on the former site of the National Training School for Boys in northeast Washington, D. C. The complete plans for the comprehensive education system will include provision for expansion of the design to other elementary facilities and for extension to a secondary school education program.

Since the secondary facilities are not expected to be built until at least 1975, planning and description cannot be as detailed as they were for the First Facility program. Rather an attempt has been made to provide a model for a secondary program, with attention to alternatives. The report addresses all the major issues that must be resolved in the specific planning for the secondary program. The planning process is described in order to provide those responsible for continued planning with the capability to carry the process forward.

The secondary program design responds to urban conditions - to the city as a new form; as a new way of American life characterized by a high development of technology, by limited space, and by people dealing with each other in a situation of ever increasing velocity. The school must take advantage of resources and experiences available in the city in order to make learning relevant and to avoid enclosing students in a static environment. Metropolitan Washington is rich in the opportunities it affords to those who use the city as a classroom.

In addition the program design addresses the apparent major issues of secondary education in the country today -- program irrelevancy, sterotyped prescribed programs for particular groups of students, unresponsiveness to community needs, objectives, and resources, and lack of provision for the natural and health development of the culture of youth. Objectives for the overall plan not only seek to correct these faults but to expand the concept of school until it encompasses all learning experiences.

The secondary plan recommends an interrelated set of design components which constitute the basic organization and operation of the education program:

- Location of instructional activities in the community resources best suited to those activities (e.g., students following a program in the graphic arts will use the facilities of local printing establishments)
- Assigment of school activities to the community resources as suggested in the plan developed by Edward Logue
- Grouping of specific educational acitivities for students based upon the sharing of common experiences, as opposed to grouping according to particular programs followed by students (e.g., a student pursuing studies in computer programming could logically share facilities and be involved in common experiences with a student studying empirical data for the purpose of generating laws in physics)
- Extensive staff and student mobility throughout the community.

The elements generate a concept of educational centers which has certain program and facility design implications. For example, there will not be a self-contained building "out there" that one can point to within which a comprehensive program will be housed. Rather, activities will be located throughout the Fort Lincoln community and the entire D. C. metropolitan area. Nor should the concept generate the image of a "campus" type facility with buildings designed primarily for education scattered throughout town. And lastly, we can expect that a center might be located in more than one place. For example, the Economics and Business Management Center might be comprised of accounting firms in Fort Lincoln, the school store, retail stores, and a bank.

The design and utilization of centers greatly facilitate the attempt to meet the major needs of secondary education today. Within this setting it is rather easy to develop an education program for the Fort Lincoln secondary school having the following basic characteristics:

- Individualized instruction
- Adult and student involvement in policy making and operation
- Student involvement in daily operation of the school
- Extensive use of physical and human community resources to provide learning experiences
- Self-evaluation by students
- Minimizing the hierarchy in professional staffing
- Decentralized administration
- Student program selection based upon identified sets of behavioral objectives

- Nongraded systems of student placement
- Student selection of learning experiences, minimizing required curricula
- Flexible scheduling
- Career guidance and life simulation
- Time and space for students to explore current issues.

These characteristics are not only respond to the widely recognized major issues in American education today, but also to surveys of adult and student needs and desires conducted within this planning effort.

It was mentioned earlier that the identification of educational centers is based upon an analyses of community resources specified in the Urban Renewal Plan developed by Edward Logue. Broadly speaking, curriculum resources and the resulting centers are categorized into several areas: Science and Health, Communications, Economics and Business Management, Engineering and Technology, Social Environments, Recreation, Fine and Performing Arts. It is within this setting of activity centers that the Educational Program becomes operational. For example, part of the Economics and Business Management center might be located in an insurance company. This resource would be one appropriate to the study of statistics. Some students in this program may need to construct some of the elements of an actuarial table. According to the design of the educational program, the assignment of the tasks to realize this objective would stem from an analysis of where within the set of community resources it appears most appropriate to conduct a particular activity. In this way educational experiences are more real-world related.

Each of the Centers would be staffed by a group of professionals, students, paraprofessionals, and community personnel who would be concerned with the program offerings in those Centers. The Centers will provide instructional resources, opportunities to develop skills in school organizational procedures, social and group activities, and forums for addressing issues of concern to youth. The mechanisms which encourage these activities are: a dynamic curriculum, student participation in school operations, student sub-unit teams, and facilities designed to encourage communication between students.

- Dynamic Curriculum (see Section 3)

  Since a curriculum should be dynamic and responsive to the learner at all times, the plan recognizes many types of experiences other than classroom activity, as "creditable" course work. The plan invites any school or community member to design and participate in instructional activities. Underlying all activities is the assumption that students are individual, independent, curious beings.

- Student participation

  In order to ensure that the school responds to student needs and provides a sense of control by students themselves, the Fort Lincoln School will include students in all phases and areas of planning. They will participate in course definition, procurement of resources, evaluation of of self and staff, daily operations, and school government.

- Student Unit Teams (see Section 5.2.1.1)

  Groups of fifteen students subunits will meet three hours weekly with a teacher to discuss issues of common concern and to identify options for post-graduate goals. The students will simulate possible outcomes and ramifications of various life styles (college, marriage, vocational school after high school).

- Facilities (See Section 4)

  Throughout the community there will be social centers and areas designed to encourage formal and informal communication between students, staff, and community. These will be designated by students and molded to meet student social needs.

The planning for the Fort Lincoln secondary school conducted within a framework provided by the District of Columbia Schools in their mandate for a truly innovative program by the community through their expression of needs in an extensive series of workshops conducted during the spring and summer of 1969, and by students of the District schools through their suggestions and comments during a seminar held on February 12 and 13, 1970. (See Appendix G.)

1.2 The Design Process and Educational Planning

Underlying the design of the Fort Lincoln elementary program are several factors:

- The school is scheduled for operation September 1970.
- The students accepted for admission will range in age from 3 to 12 years.
- The primary goals of the school as expressed by school and community representatives are to enable each child to achieve mastery of basic learning skills (reading, computation, information processing), to discover and develop unique talents and interests, and to develop a positive and realistic image of himself as an individual and as a member of the family, school, and community.
- The plan incorporates many of the newest educational theories and methods that have proven successful in helping children to learn.
- No other components of the Fort Lincoln New Town contained in the Urban Renewal Plan developed by Edward Logue will be in place when the first school is built.

The same factors underlie the design of an education system for the secondary school in the Fort Lincoln New Town, with these critical differences:

- The school is not scheduled for operation before September 1975.
- The students accepted for admission will range in age from 12 to 18 years.

- The goals of the school are extended to enable each student to prepare for post high school education and career development.
- The school will provide a forum where students can address contemporary social issues.
- A community incorporating the main features and concepts of the Urban Renewal Plan will be built on the site; some elements may be built concurrently with the first secondary school.

Stated another way, the common factors influencing the design of the elementary and secondary education systems are the school goals, the student goals, the community needs and resources, and the utilization of appropriate innovative and effective instructional theories and methods. These goals are consistent with the ideas expressed by D. C. students at a seminar held on February 11 and 12 at the Smithsonian Institute (See Appendix G).

Because the secondary school is not expected to open for at least five years, the most useful approach to the development of the secondary education program is one that provides a framework for planning, highlights important design considerations and criteria, and describes the process for developing a specific plan at the appropriate time.

The elementary school plan, described in the Midterm Report, is the result of that process and the steps for designing the secondary plan are the same. Briefly, the steps are:

- Examination of relevant surrounding conditions - financial, physical, political, social

- Identification of commonly held educational goals for the student and for the school
- Specification of behavioral performance objectives consistent with the identified goals
- Selection of learning materials and activities that enable students to achieve the objectives
- Design of staffing patterns, administrative organization, and procedures to support the instructional system
- Specification of facility requirements to provide physical space and features appropriate to human and instructional needs
- Evaluation to include construction and/or selection of data collection instruments to measure achievement of goals and objectives; analysis of data and revision of system components as needed.

The above listing of steps in the design process does not imply that there is a particular sequence or finite number. Execution of the steps can overlap or proceed concurrently and, frequently, revision of the outcomes of one step is indicated as work on a subsequent step uncovers new information. For example, cost of staffing, materials, or facilities may require modification or elimination of a program designed to achieve certain educational objectives.

Discussion of each step as it applies to the secondary program will provide a frame work for outlining the contents of this report.

1.2.1 Examination of Relevant Existing Conditions

Performance of this step leads to examination of questions such as these:

> What are the characteristics of the students for whom the system is being designed?
>
> What are the expectations of others involved - teachers, parents, community leaders, administrators, legislators?
>
> What are the financial constraints?
>
> What legal conditions must be met?

Financial constraints that will obtain five years hence can be forecast only tentatively. However, the Comprehensive Plan contains cost estimates for the elements of the plan and provides a mechanism for determining how these costs will change with varying conditions such as fluctuating student load, phasing of building programs, and altering student/teacher ratios.

The other questions will be answered in terms of present conditions with some prediction of future conditions and program implications where evidence warrants.

1.2.2 Identification of Educational Goals

The goals for the Fort Lincoln system as determined by the planning contract and the community survey are described in detail in the Definition Report, Section 5, pages 5-1 ff. Specific references to goals as they relate to the secondary program and the outcomes of a two day meeting among area high school students are included in this report (See Appendix G). In brief these student goals reflect a need for better occupational preparation, counseling by teachers, student voice in decisions affecting them, relevant courses, and up-to-date facilities and materials.

1.2.3 Specification of Behavioral Performance Objectives

The performance objectives that provide a basis for curriculum design are derived from the educational goals. For the elementary program, considerable time and effort was devoted to specifying objectives so that learning materials and equipment could be selected for purchase and placement by fall 1970. In the case of the secondary school, the delayed opening allows time for the performance objectives being developed in many schools across the country to be tested and revised. By the time the first Fort Lincoln secondary school is ready to open, adequate numbers of performance objectives in all subject areas will be readily available. In many cases, learning materials designed to those objectives will also be available. Sample objectives, particularly in science, mathematics, and English, that have been developed recently are included in Appendix C as indicative of future products.

1.2.4 Selection of Learning Materials and Activities

Once the learning objectives have been specified, materials and activities can be selected or designed which will help the student to achieve the objectives. The underlying principle in selection of learning experiences is that the instructional activities match as closely as possible the behavior described in the objective. An obvious example is automobile driving. Students do not learn to drive by sitting in a classroom discussing the principles of the internal combustion engine and traffic regulations.

Less obvious perhaps is an example taken from social studies. Students do not become responsible citizens merely by studying government organization and the Constitution. Instead, responsibility is learned by having it. Gradual and guided increase in the scope of what students take responsibility for, from their own learning to making and implementing school policy decisions, is realistic preparation for adult roles. This preparation is clearly a desire of D. C. students and a responsibility of the school to provide.

Without performance objectives, materials and activities can be specified only in general terms. However, a matrix for guiding the secondary school curriculum at the appropriate time has been devised. It covers the steps from preparation of objectives to evaluation, and summarizes the entire process. A portion of the matrix and a description of its use are in Section 3. 4. Some existing materials of demonstrated quality and some curriculum development projects are included as an indication of what is likely to be available for the Fort Lincoln New Town secondary program (see Appendices A, B, and D).

1. 2. 5 Design of Staffing Patterns, Administrative Organization, and Procedures

The principles that guided the design of these components for the First Facility are also valid for the secondary program: decentralization of responsibility and decision making; opportunity for student participation in policy decisions; facilitation of school-community relationships. Staffing, organization, and procedures are discussed in Section 5 in terms of modifications required by increased size, new system and individual functions, and the political, social, professional and other conditions that will prevail in 1975.

1.2.6 Specification of Facility Requirements

What implications do the characteristics of learners, the objectives, the learning activities, and other features of the program have for the design of the physical space? In Section 4 these elements are examined, analyzed, and organized in terms meaningful to the architect charged with the design of the buildings needed to house the secondary program.

1.2.7 Evaluation

The effectiveness of the entire educational plan rests on the assumption that any component will be retained only as long as it demonstrates value. Frequent assessment and revision, both formal and informal, must be second nature to everyone involved in the education process - planning and implementation - if it is to remain relevant and responsive in a changing society.

The degree to which goals and objectives are stated with clarity and precision influences the degree to which successful evaluation instruments can be designed and applied. Many indicators can be employed depending upon the level and type of evaluative data being sought. The issues and problems of system evaluation and some suggestions for implementation are discussed in the Comprehensive Plan.

1.3 Examination of Surrounding Conditions

The first step in the design process is the examination of relevant conditions. These will be summarized in two parts: general issues of secondary education (student characteristics and expectations, community expectations) and future trends.

1.3.1 Issues Affecting the Design of a Secondary Education Program

A primary consideration in the design of a secondary education program is the nature of the students. What do they bring with them? What aspects of their physical, emotional, social, and intellectual development have a bearing on the education experience? What are their needs and aspirations?

Students who enter the Fort Lincoln secondary school will come either from the Fort Lincoln elementary school or from traditional elementary schools. Students who have attended the Fort Lincoln school (or one of similar nature) will have these characteristics:

- Mastery of minimum required objectives for program completion (see Midterm Report, Appendix I, Figure E4)
- Experience with a variety of self-instructional materials
- Ability to specify and pursue independent learning projects
- Ability to take and score progress tests and maintain records
- Ability to operate audiovisual devices
- Knowledge of and experience in using selected community resources
- Direct or indirect experience in making decisions affecting school policy and operating procedures
- Experience in negotiating with both peers and adults for mutual satisfaction of learning needs and objectives.

A similar profile of students entering from schools other than Fort Lincoln cannot be drawn because of the lack of precise information and because of the wide variation in student achievement in basic skills from school to school.

The age range of students in the elementary school forces consideration of certain needs related to growth and development such as the need for exercise of large muscles, the need for concrete experience to learn concepts, and the need to employ all senses. Similarly the age range of students entering secondary school dictates consideration of a number of characteristics related to their growth and development.

The teen years span the transition from child to adult. During this period students are questioning the values, beliefs, and attitudes of their elders at the same time struggling to identify their own values, beliefs, and attitudes; exploring career alternatives; experiencing the anxieties associated with assuming adult roles and responsibilities; and adjusting to the significance of rapid growth and physical change.

Whatever else a school does, it must provide the setting, the resources, and the guidance to assist the students to confront these inescapable issues successfully.

A two-day meeting of student representatives from all District high schools yielded these comments and suggestions regarding secondary education. For a full description of the seminar and a complete list of student suggestions, see Appendix G. One of the benefits of this seminar was that the planners were able to listen to the students' suggestions and to find a great deal of overlap and congruence between what the students wanted and the recommended outline for Fort Lincoln secondary school. The student emphasis on flexibility, relevancy, and responsiveness to their needs are all key components in the secondary school model.

- Student Representation

  Students felt strongly about student representation in all aspects of school life. They want students to take part in hiring teachers, to evaluate existing staff, to select their own courses and teachers; and to have a joint committee which would deal with problems of student discipline and complaints made by or against any student, teacher, or administrator with the rules to be the same for all. The students developed a model to show the relationships among students, administrators, parents, and teachers in school governance. (For a full description, see Appendix G).

- Relevant Courses and Required Courses

  Required courses, according to students, should be English composition, general math, co-ed sex education, and criminal and political law. An alternative to these required courses would be to have each student take a course in the humanities (English, history, philosophy, arts, history of religion, law, and sex education combined) and a course in general math. Courses such as physical education and science should not be required.

  In terms of relevant courses, teachers should teach what students want to know. Ethnic studies should be available with credit equal to other courses. Students need courses that relate to them and their environment and courses in contemporary issues such as drug addiction, film making, and urban problems.

Students want vocational programs in all secondary schools and work-study programs in which a student receives grade credits for having a job.

- Personnel

In addition to having a part in the selection of teachers, students are interested in how the teacher selection process is carried out. They think teachers should be selected by a committee of students, parents and faculty and on the basis of scores on an aptitude test in the subject they are to teach rather than on the basis of academic background or seniority. "Capable" persons who may not have a degree but who have the skills to be a teacher and are sensitive to the students' needs should be considered for teaching jobs.

- Teaching Methodology

Lectures (a one-way exchange) are not effective as a teaching method. Seminars and student discussions are preferable. Students respond better when they are responsible for their own learning (as in night school).

Students ask for more "off campus" experiences such as using city facilities as a resource for learning. They also want smaller classes.

- Counseling

Students want more job counseling and more time for counseling. They feel the student/counselor ratio is inadequate, especially to advise twelfth graders.

They think teachers should play the full role of advisors so that the teacher-counselor role is combined. Another suggestion is that teams of one student and one teacher should act as a joint committee to advise students on personal problems.

- Evaluation of Students' Work

  Students want an end to mandatory testing with tests and grades given only on demand by students. They think the SAT's and achievement tests should not be required because each student knows his own achievement level. The Carnegie unit system should be dropped. Further, qualified students should be free to take course work above grade level and students should get grade credits for tutoring other students.

- Course Scheduling

  Students favor flexible course scheduling. They like a quarter system because they believe this system gives them a greater variety of courses in the span of a nine-month school year. On the other hand, some students favored having one subject given all day for several weeks until the student completes the required hours in that subject. Students agreed attendance hours should be flexible with credit based on the number of hours a student attends. They thought tapes ought to be standard procedure so that students who miss school can catch up. All courses should be available on a trial basis to allow a student to see if he likes the subject and if he can do the work.

- Facilities

  Ideal facilities for a school included a student center with such features as a separate room for dances and proms, a fiberglass stage with a rising platform, good acoustics, a good public address system, and a kitchen big enough to produce banquet meals. All of the above could be rented to community groups to make money for the school.

  Other facility features would include a library shared with the community and open 24 hours a day; separate study carrels apart from the library; a smoking lounge for students; an office for student government; a student-run bookstore; a student parking lot; and separate gym facilities with areas for judo and karate, gymnastics, indoor track, football, bowling, basketball, tennis, and swimming.

At this time it is worthwhile to identify more of the design elements of the Fort Lincoln secondary program which have been incorporated in response to student desires and recommendations:

- Most formal learning activities are developed as a result of student options. Required sequences are recommended only in the areas of math and English.
- Formal grades will be replaced by evaluation of student performance based on behavioral outcomes selected in a large part by students.

- Many formal teaching activities will be conducted by subject matter experts who are selected from the community for their unique capabilities.
- Extensive provisions are recommended for close counseling of student's personal and career needs.
- Students will have a formal voice in teacher selection.
- Evaluation of student performance will be a function of students and teachers working together.
- Work experience is an integral part of all aspects of the curriculum.
- Specific facilities will be provided for student activities.
- Students will participate in the daily operation of the school.

Adult expectations of the secondary school have been documented frequently in recent months in terms of what they see is wrong with the schools and what should be done to remedy the situation. Generally the adult position is more conservative than the student position with a tendency to enforce the existing structure rather than risk change.

A nationwide survey conducted by Louis Harris and reported in Life, May 16, 1969, summarizes the views held by parents.

> 20% of parents want more student participation in policy making; 11% want less; 65% want the same as now.
>
> Parents find that today's students lack respect for authority, lack discipline, and lack ambition and motivation.
>
> 62% of parents think maintaining discipline is more important than student self inquiry.
>
> 70% of parents think homework requiring memorizing is good and useful.

> 63% of parents think the way to handle unruly students is to crack down on them; 35% think one should try to understand them.

1.3.2 Future Trends

It has become commonplace to cite change and the increasing rate of change as a real but vexing fact of modern existence. Its significance must be recognized and dealt with, however, if we hope to make any improvement in the quality of education.

Neil Postman and Charles Weingartner* illustrate the nature of change with a dramatic example from the field of media. In their metaphor, the 3,000 years that man has had access to writing systems is represented on a 60 minute clock face with 50 years to each minute. On this scale, the first significant media change, the invention of the printing press, occurred about 9 minutes ago; the computer appeared in the last 5 seconds.

It is necessary to accept change as a continuing aspect of life and to adopt appropriate educational policies in response. It is also necessary to examine some of the more likely changes to expect and either prepare for them or take steps to avoid or at least minimize them. The following section summarizes some of the more important technological, economic, and social changes that can reasonable be expected over the next 25 years and suggests some of the implications of these changes for education.

The forecasts tend to be optomistic; that is, they assume that such profound problems as the dissolution of the family, racial strife, decline of cities, environmental pollution, and individual and mob violence will be ameliorated, at least to the extent that the U. S. will remain intack as a nation despite major social changes, or at least reverse the growth of these conditions. If not, concern with the design of secondary school may be irrelevant.

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*Teaching as a Subversive Activity. New York: Delacorte Press, 1969, p. 10.

1.3.2.1 Technological Advance

Advances in technology, including the development of new products, new materials and new processes, will extend automation to small-scale production and service industries, computerize many clerical and managerial activities and will continue to alter the composition of the labor force. These advances also will affect other areas of life. They will be useful in controlling the environment, providing new opportunities for leisure time and offering new areas for research and study.

Trends	Educational Implications
• White collar work will increase much more rapidly than blue collar work. The number of white collar workers is expected to increase from 44.5% of the total force in 1965 to nearly 48% in 1975. Blue collar workers are expected to decline from 36.7% to 34% and the unskilled will represent less than 5%.	• Curricula must prepare students for new careers which emerge as a result of automation and technological change. • An increasing number of students must be prepared for white collar managerial as well as support clerical and secretarial positions. As the market for the unskilled decreases,

	the growing dropout rate must be checked, through dropout prevention rather than corrective measures, in order that all students are taught skills.
• Major employment growth will occur in government, service industries, education, and trade. Manufacturing and transportation will grow at a slower rate. There will be absolute declines in mining and agriculture. An estimated one out of six persons will be engaged in government service. One out of five will be involved in buying and selling. An increasing number of women will enter the labor market.	• The need for traditional vocational programs training students for manufacturing and agriculture will decline. However, programs oriented to future processes will become increasingly important. With the development of new technologies and methods and an increase in the number of advanced degree professionals, an increasing number of technicians will be needed. In some fields, six to eight technicians are needed for every advanced degree professional.

Trends	Educational Implications
• Because of a shift in economic and social demands, there will be a growing trend for individuals to change careers two or more times during a lifetime. In managerial, professional and technical careers, these shifts will involve major changes of occupation and not just the acquisition of new skills. In other fields, the shifts may occur after retirement.	• Curricula must prepare students for flexible career patterns. This entails a shift in emphasis from memory to inquiry in an effort to teach students the basic structure and concepts of a discipline rather than factual information. Curricula will stress the interrelationships of ideas in an interdisciplinary approach to learning. • Guidance programs will become increasingly important in helping students select career paths and in making them aware of the many careers open to them.
• The work week is likely to remain 40-50 hours for many. However, some will probably hold two 20-hour-a-week jobs and others will work only 30 hours a week. In addition, technological improvements will simplify or eliminate	• School systems will fill an increasingly important role in providing adult education and recreation for a community. The growing number of senior citizens will need special attention. • Curricula must prepare students to use their leisure time effectively and

many non-job tasks. As a result discretionary time will increase and be used more and more for recreation and education. With the likelihood of a younger mandatory retirement age in many industries and of improved medical services, the number of unemployed senior citizens will grow at an unusually fast rate.

stimulate them to continue their education throughout their lifetime.

- Technological advances will continue to be developed in every field, altering the processes and methods of work in all areas of life.

  For example, the laser beam offers great potential for both peace and wartime uses. On one hand, it is expected to lead to the development of improved radar and range finding systems, three-dimensional holographic methods of photography, enormous advances in all the communications industries, and better data storage systems. However, the beam also has the capacity to

- Technological improvements in education will be available. Advances in teaching (ETV, closed-circuit television, and computer-assisted instruction) and in administration (computerized budgeting and purchasing) must be used. Advances in other fields will have benefits for education. Experimental high performing plastics, fiberous materials and adhesives can be used for innovations in equipment and facilities. Innovations in power conductivity and conversion will make new sources of power crumble granite and marble and could be developed into a potential "death ray."

available to school systems and entire metropolitan areas.

- Laser beam advances will contribute to education particularly in the areas of improved instructional television, audiovisual equipment, and data storage systems. Improved television methods will be available to schools. Videotapes and cassettes can be used to develop home educational and recreational activities. And the beam, now capable of reducing data to store an entire 20,000 book library on an 8- by 10-inch piece of nickel foil, will present one solution to the information storage problem.
- The psychological and sociological impact of these advances must be recognized by educational systems at all levels. Every individual must be educated to the beneficial and the destructive potential in the technological advances and of the importance of sound decision making to direct and control these forces.

Trends	Educational Implications
• The "multi-city" metropolitan area will replace the "city" of today stimulating the development of new methods of controlling air and water pollution, waste disposal, and other environmental problems. Space will become a major focus providing a "new frontier" for physical exploration and scientific research.	• Curricula changes will have to be made in all subject-matter areas to prepare students to deal with technological advances and accompanying changes in society and life styles. All students should be taught the scientific method as an approach to problem solving, the areas in which the advances are being made, and the implications of them. They must be introduced to new areas of study such as city and regional planning, ecology and space-related sciences, as well as to being psychologically prepared for the effects of these technological and environmental changes on their lives. Specialized science and vocational programs will have to be instituted for specialized careers.
• Advances in transportation (the supersonic transport, jumbo jet,	• Curricula should prepare students for foreign travel through social

vertical take-off and landing planes and air cushion land vehicles) will decrease travel time between cities and countries and alter recreation and employment patterns.	studies programs which examine cultural differences as well as land size, population and exports, and foreign language programs which stress conversational fluency rather than rules of grammar.
• The computer, as well as other scientific equipment, increasingly will touch every individual's life. Home computers will be available to the housewife at home for budgeting and planning, and mechanized robots will be designed for household chores.	• Curricula must include programs to give all students, girls as well as boys, basic skills in accessing and programming computers and using existing programs for personal and professional purposes.

1.3.2.2 Knowledge Explosion

Knowledge will become increasingly important as a basis of power and as a factor in social change and economic growth. As a result, the prestige of and need for higher education and the demand for quality education at all levels will grow.

Trends	Educational Implications
• By 1980, the U. S. knowledge industries (which produce and distribute ideas and information rather	• New educational materials, equipment, and methods will be developed. Advances in all areas of industry

than goods) will account for one-half the total GNP. An increasing number of large corporations looking for new areas of diversification may be expected to turn to education.

will be applied to educational problems.

- The demand for skilled technicians and professionals with advanced degrees will grow. As a result, private and public expenditures for education will increase.

- An increasing percentage of students will complete high school and go on to post high school education programs with enrollment expanding primarily at public colleges. Although estimates indicate the period of rapid expansion is over, the number of junior colleges will continue to grow.

- Contrary to some forecasts for an increasing number of advanced degree-holders, many predictions project a growing informalism in education with advance study more closely integrated with work and a decreasing emphasis on formal degrees.

- The theories, principles, facts and techniques of many scientific fields can be expected to be changed, revised and/or expanded every ten years, and the amount of printed material and other information to be processed is expected to increase at a similar rate.
- Curricula will have to be enlarged to include the new areas of study. Already the discovery of DNA and the technological advances associated with space exploration have had tremendous impact on traditional biology. Similar expansions may be expected in all fields.
- Enlarged library space, more effective information storage methods, and improved information retrieval systems will be needed.
- The need for on-going evaluation and assessment of curriculum content will grow. Appropriate selection of material to be taught will become increasingly important. Stringent criteria for program goals and content must be developed, and the "life expectancy" of a curriculum will be shorter than ever.

1.3.2.3 Economic and Social Trends

With an expanding labor force and rising productivity, the composition of the economy and the way of life of many people will change. Fluctuation in the economy will affect the priorities set by individuals, communities, industry, and government as well as influence social and political movements.

Trends	Educational Implications
By 1980, public expenditures for public services including pollution control, education, housing, transportation, and health services may be expected to double. Private industry will expand from the consumer and industrial market into the public service fields.	The economic curriculum must be strengthened and focused on the public and private policy implications of the transition into a "post-industrial" or "services" economy.
Growth estimates suggest that the per capita income will double every generation and that the individual's real income will increase by two-thirds by the year 2, 000. Family spending patterns will change, with a smaller percent of the total income used for non-durable goods such as food, clothing, and household supplies and a larger percent used for personal services, education, travel, and recreation.	Education, including school, educational travel, materials, and equipment will receive a growing percentage of every family's income.

- Rapid communication and the rising level of education will increase the general public's sophistication in the methods of producing change. This knowledge will decrease the practice with the status quo and increase the likelihood of social movements (public demonstrations or riots) protesting public grievances.

- The demand for education reform will grow with students, parents, staff and community residents calling for a voice in determining educational policy and programs. School systems will have to include faculty and students in the decision-making process and, at least on the college level, increase their participation in program and curriculum design.

- Student activism, a movement which has occurred in countries throughout the world, is likely to continue. The movement may be expected to become more complex as the radical generation take jobs, become teachers, and enter other areas of the Establishment.

- Curricula must be broadened and educational programs must be expanded to meet the demands of the civil rights movement as well as other social movements. Multi-ethnic studies and interpersonal relations should be given much increased implication. Programs should be set up to reduce cultural isolation and build understanding of diversity and variation in life styles.

- The Black Movement will continue to grow; however, the emphasis will switch from the legal and constitutional area to the economic sphere of employment and wages.
- Educational systems must prepare an increasing number of disadvantaged students for positions of responsibility enabling them to obtain and use the power they demand.
- With increasing pressure for social and economic equality, the conflict between the traditional view of education as an academic process of intellectual and professional training and the contemporary view of education as a process for improving the quality and direction of social change is likely to continue.
- In general, because of the rapidity of technological and environmental change and the growing "rootlessness" of society, schools must help give all individuals a heightened sense of self-awareness and inner security. This inner belief in the worthwhileness of the individual is especially necessary for the ghetto child.

1.3.2.4 International Trends

In the next 25 years, the tension between the underdeveloped and the developed nations with a heightened nationalism among the new nations is likely to replace the existing East-West polarization. At the same time, in this "multi-polar" world, there will be a growing interdependence of the major institutions of society -- business, labor, government, education, and religion.

Trends	Educational Implications
• Economic interdependence in trade and industry will grow, creating regional alliances among nations and stimulating a world-wide internationalism. More and more individuals will be involved in international travel for work and for recreation.	• Curricula must be altered to meet the needs of an internationally oriented society. Social studies and current events should be stressed at all levels and foreign language programs should be expanded.
• Instantaneous world-wide communications will be developed. Communications satellites offer enormous potential for improved telephone and television facilities.	• Program content in all subject matter areas should reflect a "world-view" of culture, history, and economic and political events. International exchange of television programs and videotapes can be used for social studies and foreign language programs.
• International issues of increasing complexity will become domestic issues affecting industry and government. The general public will need to become increasingly well-informed.	• Current events will become increasingly important for all age groups. In addition, curricula must be changed to emphasize the study of ideological conflict, the problems of economic development, the population explosion and the consequences of regional and other international alliances.

- International student exchange programs need to be expanded.

The information was compiled from many sources and includes the thinking of Educational Services staff members and external consultants. In several cases, contradictory predictions have been made by future environment specialists. In these instances, broad areas of technological or environmental change are described and alternative directions for future growth are indicated. In other instances, conflicting trends may materialize simultaneously or a change in one direction may be balanced by a subsequent reversal in another.

The outside sources include studies made for school systems such as The Report of the Advisory Committee on School Goals to the Westport, Connecticut, Board of Education, a report entitled Our Future Business Environment compiled by General Electric staff, The Year 2000 by Herman Kahn and Anthony J. Wiener, and many magazine and newspaper articles. The statistics on employment projections and economic growth were taken from "Business and the Future" by Carl H. Madden, The Futurist, December, 1969.

2. ESSENTIAL COMPONENTS FOR THE DESIGN OF THE SECONDARY PROGRAM

In Section 1 of this report, the more important conditions that relate to the design of the secondary education system for Fort Lincoln New Town are examined. The goals for the program as expressed by representative students, parents, and community members are reviewed; and, finally, the future trends of conditions that influence educational design are discussed.

To summarize Section 1 briefly, both professional educators and D. C. students recommends that the following be taken into account in the design of the secondary program:

- A nucleus of students who have mastered basic learning skills and are independent, resourceful students accustomed to participating in decisions which affect their education.
- A student body whose interests are directed primarily toward assuming adult roles and responsibilities including career selection and preparation.
- A growing dissatisfaction with the existing educational system organization, goals, and methods of instruction, particularly their lack of relevance and failure to explore new knowledge about the nature of learning.
- Substantial evidence of a need for citizens who have extensive professional and/or technical preparation, can make reasonable judgements about the application and content of scientific and technological discoveries, have the language skills to facilitate international travel and communication, and can utilize the computer as a personal as well as job-related tool.

Given these conditions, it is possible to describe the components that a secondary education program must have in order to have any chance at all of meeting the needs of tomorrow's students, even though specific objectives and materials are not identified. Essentially these components are extensions of the elementary school components, as well as responses to views expressed by students in the secondary school seminar.

To guide further the final design of the secondary education program, General Learning has constructed a model of educational centers for the development of curriculum and the specification of facility requirements.

This section contains a description of the elementary school components as they apply to the secondary program and a description of the Center Concept.

2.1 Extension of Elementary School Characteristics

The principal components of the elementary Education Plan were chosen because they had been demonstrated to be effective in improving student learning and because they are consistent with the goals for the school set forth by the community and the school system. These components are:

- An individualized instructional program
- A nongraded system of student placement
- The use of performance objectives as a basis for curriculum design and student evaluation
- The active use of an extensive collection of self-instructional materials
- Responsiveness to those most affected (students, parents, and teachers)
- Continuous evaluation and revision of objectives, methods, materials, and all other factors related to the instructional process.

The components are equally valid for the design of a secondary education system or, for that matter, an adult education system. (For a full discussion of these components see Midterm Report, Volume I, pages 1-1 to 1-7). The differences emerge as these components are expressed in terms of the particular needs and purposes of the students under consideration.

2.1.1 Individualized Instruction

A more sophisticated model of individualized instruction than those currently in use at the secondary school is needed. Some programs which rely exclusively on individualized procedures requiring a great deal of independent, mature activity have caused serious difficulties for students who are not prepared to manage such freedom.

Everyone in the school -- administrators, teachers, and students -- must have a similar idea of what individualized instruction is and how it operates. When these conditions are achieved, students and teachers will have compatible expectations of each other and morale will be high. If morale is high, teachers will be more effective in their teaching and students will use the freedom of an individualized program to best advantage. A great deal of effort must be applied to maintaining consistent policies and procedures of individualized instruction.

2.1.2 Nongrading

Nongraded placement may be even more important for a secondary program than for an elementary program. As pointed out in Nongraded Schools In Action*, differences in learning ability among students appear to widen as students grow older. Add to this difference in learning ability the diversity among maturing students regarding interests and career goals and the case for nongrading is unquestionable.

The Melbourne High School is one example of how nongrading can be implemented on the secondary level. Appendix A contains a description and analysis of the Melbourne program.

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* Hillson, Maurie. "The Nongraded School: A Dynamic Concept" in Nongraded Schools in Action. David W. Geggs, III and Edward G. Buffie (eds). Bloomington: Indiana University Press, 1967, p. 50.

2.1.3 Performance Objectives

In general, the emphasis in the elementary program on preparing independent learners who have mastered the basic skills of reading, computation, communication, and information processing is equally valid for the secondary program. The difference will be in the particular content to which these skills are applied and the breadth and depth to which the content is developed.

Another difference is the need to consider career choice and preparation. The elementary curriculum provides opportunity for students to become familiar with many different occupations. On the secondary level, the number of alternatives explored by the student must be increased and the opportunity to examine the implications of many career choices must be provided. Participants in the secondary seminar unanimously agreed on this issue. Ways to achieve these objectives and the scope and depth of occupational preparation in the Fort Lincoln program will be discussed in Section 3.

2.1.4 Self-Instructional Materials

The selection of learning materials and activities is less of an issue on the secondary level than on the elementary level. This is because secondary students have achieved some mastery of reading, communication, computation, and information processing skills. In addition, by virtue of their age, size, and stage of development, they have had more experiences, are physically independent, and can handle abstraction more easily. Therefore, a wider range of aural and written materials is useful to the secondary student and more community resources are accessible to him. Also, secondary students are better able to define their own learning objectives and locate, evaluate, and select the necessary materials and/or experiences. Thus, the opportunity for students to select appropriate materials, in conjunction with adults who assist in mapping out their program, has been built into the program.

Fewer innovative learning materials of good quality are availalbe for the secondary level because of the reliance on textbooks and lectures. Gradually, however, this lack is being remedied. A number of curriculum projects now in use or under development in a variety of disciplines is described in Appendix I.

The curriculum materials now available and those materials in developmental stages will be most useful at Fort Lincoln as an effective supplement to real experiences of students. For example, students working in the day care center will need information relating to child development, teaching, and institutional organization. Materials must be provided that meet needs and answer the questions stimulated by a real-life situation.

2.1.5 System Responsiveness

If current events are any indication of future trends, secondary students are seeking and obtaining a greater voice in the educational system of which they are a part. This participation can take place on one or more of three different levels: individual program, school procedures, and planning. Area students developed a model for participation contained in Appendix G.

The model for student participation in individual program planning can be extended from the elementary to the secondary level. A student who has had experience in the First Facility will be capable of assuming more and more responsibility for selecting his course of study, allocating time, choosing methods and media, and evaluating progress. Teachers can enhance this process by suggesting alternatives that broaden a student's range of possible choices as much as possible for as long as possible.

Student representation on stage teams at the elementary level provides the mechanism for student participation in decisions relating to purchase of materials, use of equipment, and other operating procedures.

Student participation in planning assumes an important role at the secondary level. The process of confronting significant issues, working out solutions, and assuming responsibility for the consequences in conjunction with other principles and procedures apply in most cases to the secondary plan and are described in detail in Section 5.

The concept of continuous evaluation and revision in all steps of the design, implementation, and operation as described in the Midterm Report is implied throughout this report. Formal consideration of the evaluation process is contained in the Comprehensive Plan.

2.2 Center Concept

2.2.1 Description and Rationale

The Center Concept conceived by General Learning Corporation (see Section 1.1) provides a framework for organizing the elements of an education system. The development of the Center Concept begins with the organization of human activities into seven broad categories:

Communications
Fine and Performing Arts
Science and Health
Social Environments
Economics and Business Management
Engineering and Technology
Physical Recreation

The number and exact titles are arbitrary and subject to modification as experience and continuing analysis indicate. They were selected as the point of departure because they met certain criteria:

- They represent legitimate and important components of community life whereby society organizes to deal with the problems of existence.
- There is evidence of their continuing importance.
- Analysis of the Urban Renewal Plan submitted by Edward Logue and modified by Redevelopment Land Agency indicates that space has been allocated on the Fort Lincoln site for operation of facilities related to each of these areas.

The Center Concept not only allows implementation of the features of the secondary program described in Section 2.1, but, in addition, offers a mechanism for integrating community and school, increases the likelihood of a relevant curriculum, and is flexible enough to be implemented under widely varying conditions.

Perhaps the most compelling argument for the value of the Center Concept is its impact on curriculum design. Traditionally, learning activities are arranged in a rigid subject and sequence system based primarily on a scholarly and logical classification of known facts and phenomena. Obviously, the knowledge and skills were not attained this way originally. They were attained by individuals looking for a solution to a problem or a question.

By organizing the curriculum around Centers or systems of human activity, the way is opened for students to seek solutions to real problems which confront them in their personal and public lives. In the Science and Health Center, students would seek answers to such questions as:

> What happens in may body when I smoke cigarettes?
>
> How does immunization protect against illness?
>
> Why do I feel depressed sometimes?
>
> Are the public health problems we face today the same as those 50 or 100 or 500 years ago?

In the Economics and Business Management Center they would seek answers to such questions as:

> What impact have computers had on business management?
>
> How do I start a business of my own?
>
> What is the cheapest way to borrow money?

This approach to curriculum design facilitates an interdisciplinary approach to learning, immediate observation of experience in practical application of theory, and convenient investigation and comparison of career alternatives.

2.2.2 Relationship of Center Concept to Design Process

Within the design process of an education system outlined at the beginning of this report, the Center Concept first has application at the point where materials and activities to achieve an objective are specified. For example, a student working on an objective relating to oral communication would go to the Fine and Performing Arts Center where the resources to achieve this objective would be concentrated: acoustically engineered rooms, speech and drama instructors, radio and/or TV broadcast studios.

In some instances the choice of Center will not be clear cut. An objective requiring the production of a written paper containing the student's analysis of and solutions to a praticular problem could be achieved in any Center depending upon the nature of the problem. By nature of its activity, written communication, it also could reasonably be accomplished in the Communications Center.

One solution would be to perform the activity in the Communication Center where resources for technical and mechanical production are located, with content being drawn from all other Centers. Another solution is to assign resources for achievement of basic communication and computation skills to all Centers. The first solution has the advantage of increasing communication among Centers.

Another assignment problem might arise if the solution to a particular problem requires a resource assigned to another Center. Advertising is a topic most likely to arise in the Economics and Business Management Center. However, the techniques of communication that make advertising effective are assigned to the Communications Center. Or a student working in the Science and Health Center may wish to write and produce for distribution to parents a pamphlet about conditions in the home that are hazardous to children. If the first solution is applied, both students would go to the Communications Center.

The first solution to assignment problems offers the additional advantage of bringing together students employing similar means to achieve differing ends. And when this happens, the likelihood of broadening experience for each student is increased.

2.2.3 Alternatives of Implementation

The word "Center" designating this concept of educational program design should evoke associations with a problem-centered approach to learning rather than physical location. Focus on the broader interpretation of the word permits implementation of the concept in a wide variety of settings and conditions.

In its most limited application, the Center Concept would serve to construct new relationships among subjects and introduce flexibility into the learning sequence. Students would examine problems arising from their everyday lives, but the problem solving activities would be centered primarily in a single facility, the school, with community resources brought in as needed. Students would have access to all media and selected community members as data sources about community, but direct experience would be limited.

In the second alternative, an administrative unit of limited size would serve as a coordinating center. Units of 130 to 150 students and teachers located throughout the city would provide counseling services, opportunity for socialization, and tutorial instruction. The bulk of learning activities would take place in existing community institutions.

Learning experiences would take place in community facilities conducting activities related to the specified Centers. For example, problems related to Economics and Business Management would be studied at banks, insurance companies, and department stores. Problems related to Engineering and Technology would be studied at the National Bureau of Standards or the Naval Observatory.

Students would have contact with people in a variety of occupations, would observe first hand the duties and working conditions, and frequently would have direct experience performing some of these duties. This alternative offers these advantages as well: instruction would be under the direction of or supplemented by practicing professionals; students would have access to up to date materials and processes; opportunity for part-time jobs is increased; the need for construction of school facilities is decreased. Area students at the secondary seminar indicated a definite interest in a work/study program and in courses which would allow them to use the resources and facilities of the city.

The Parkway Program in Philadelphia has successfully operated a similar plan for about a year. A description and analysis of this project are contained in Appendix A.

The third alternative for implementation of the Center Concept would be to locate the learning activities associated with the respective Centers in the community institutions constructed to serve the residents of the Fort Lincoln New Town community. For example, the facility serving the health needs of the Fort Lincoln community (including students) would also accommodate the learning activities related to Science and Health. The facility housing the public library would also contain the space and resources for educational activities related to the Communications Center.

Fort Lincoln New Town offers a rare opportunity to design an educational plan that is truly integrated into the life of the community it serves. The educational requirements can be specified and translated into facility plans before the community is built rather than to try to fit them in afterward. The early specification of educational requirements also will help to guide the location and design of community services.

The internal transportation system, the proximity of residential, public, and commercial areas to each other, and the availability of resources in Metropolitan Washington to supplement the Fort Lincoln facilities make Fort Lincoln an ideal setting for the realization of the educational goals expressed by the students, the community, and the school through the full implementation of the Center Concept. The remainder of this report describes how this implementation would take place.

3. IMPLEMENTATION OF THE CENTER CONCEPT AT FORT LINCOLN

3.1 Resources for the Centers on the Fort Lincoln Site

The Urban Renewal Plan submitted by Edward Logue and revised by RLA defines these resources to serve the Fort Lincoln community in terms of permitted land usage:

- Residential — Single and multiple unit dwellings of various design will be built on several locations. Other facilities which may be built on designated residential sites include neighborhood commercial stores, day care centers, and preschool centers.
- Local convenience centers — A number of these centers will be scattered throughout the Fort Lincoln complex. Permitted on these sites will be such facilities as professional offices, schools, churches, health and recreation centers, transit station, and small businesses — food store, drugstore, restaurant, and the like. The exact location and size of these local centers is not yet determined.
- Town Center — In this central area, permitted uses include small businesses offering consumer goods and services, public and private offices, a fine and performing arts institution, other recreational facilities, churches, transit station, and government

services — post office, police station, fire station, health center, library.

- Park and Recreation — Space will be allocated for active and passive recreational facilities and park land throughout the site. Some portions will be left in the "natural" state and other portions will be developed as, for example, walks, playing fields, playgrounds, and picnic areas.

Certain enterprises are prohibited on the Fort Lincoln site because of restrictions on land usage. The following are not permitted:

- Carpet cleaning
- Correctional or penal institutions
- Dog pound, animal hospital, stables, kennels, etc.
- Poultry killing or dressing
- Dying, cleaning, pressing of clothes
- Display or sale of motor vehicles
- Repair shops for wheeled motor vehicles
- Filling station (except in the site location designated C-1)
- Trailer sale, storage, or repair
- Hotels with fewer than 20 sleeping rooms

The restrictions do not compromise the implementation of the Center Concept. The table below shows how closely the seven categories tentatively suggested for organization of the secondary curriculum parallel the activities proposed for the Fort Lincoln community.

Community Location

Educational Center	Residential	Local Convenience Center	Town Center	Recreation
Communications			library post office	
Fine and Performing Arts			fine and performing arts center	
Science and Health	preschool day care centers	health center doctors' and dentists' offices	health center	
Social Environments	single and multiple unit dwellings	school churches		parks
Economics and Business Management	neighborhood stores	small businesses	government & private offices retail stores bank	marina hotel - motel
Engineering and Technology		transit station	computer ctr. fire and police stations	
Physical Recreation		recreation center		picnic areas playgrounds

3.2 Center Activities

This section describes some of the community services and educational activities that will be located in the seven Centers and suggests a few resources of the metropolitan area that could supplement the Fort Lincoln resources.

3.2.1 Communications Center

3.2.1.1 Community Activities

The Communications Center would include the post office, library, a teletype machine, space for publication of a weekly newspaper, meeting rooms, copying service, telephone business office and service headquarters, and a bulletin board or other display area for notices and posters regarding community activities.

3.2.1.2 Educational Activities

When man studies himself through such academic areas as sociology, anthropology, political science, literature and history, he is studying that information which has been communicated from person to person and age to age to build up the body of knowledge in that area and he is learning how that information was communicated. In man's study of himself he is concerned with expression and means of expression.

Basic skills such as reading, writing, and listening will be studied and practiced along with such topics as semantics, journalism, techniques of propaganda, foreign languages, non-verbal communication.

Library activities and activities surrounding the use of audio-visual materials will play an important part in the Communications Center. The large range of communication equipment in this Center provides practical experience in assembly, installation, operation, maintenance, telephone dial systems and dial access, two-way radio, central circuits, hearing aids, receiving sets, radio, television, phonographs, and tape recorders.

The Communications Center will also offer instruction and practice in other vocational skills such as typing, shorthand, duplicating, and printing.

3.2.1.3 Other Resources

Area newspapers can serve as demonstration centers for large scale printing enterprises, employ students, and provide professionals and technicians as course instructors and/or advisors to student publications.

Students pursuing special studies may use any of the special libraries and reference collections located in the area, for example, the Library of Congress, National Archives, and National Library of Medicine.

3.2.1.4 Facility Implications

To accommodate the educational activities likely to occur in the Communications Center the following spaces should be considered: a photographic laboratory, workshop for printing, laboratory for television and radio broadcasting and monitoring, television and radio production studio, public library of audiovisual materials, sound dubbing studio, and seminar/conference rooms. This is not intended as a comprehensive list nor is there a need for all of these spaces to be included in one place. A description of the characteristics of the areas described above for the Communications Center as well as for other Centers is included in Section 4.

3.2.1.5 Administration

Because of the extensive availability of specialized equipment, the Communications Center will require considerable security efforts, inventory control, and equipment repair. This Center then appears to be a logical place in which to provide warehousing and repair of educational equipment. Except for minor repair services such as replacing bulbs, belts, etc., all other repair services should be centralized.

Though administrative hierarchy will be limited throughout the Fort Lincoln Schools, the Communications Center will require central coordination, the responsibility for which may be assumed by more than one person. There will be need for extensive distribution of material, scheduling of equipment use, and security.

3.2.2 Fine and Performing Arts Center

3.2.2.1 Community Activities

The Fine and Performing Arts Center would accommodate presentation of jazz and classical concerts, ballet, plays, operas, movies, displays of painting, sculpture, photography, and other creative work, and facilities for practice, production, and creation of oral, auditory, and visual modes of expression by individuals and groups. Equipment and other requirements for production of television and radio programs would also be located here.

Space and facilities would permit performances by touring and local professional groups and community groups.

The Fine and Performing Arts Center can partially fulfill the need for a physical environment which will permit students to congregate and carry on structured social activities. Young people in the development of their own culture often look for places to meet where they can listen to recorded music and even perform in student "rock" groups. This Center will be ideal for that purpose. Students ought to feel at all times that this is their place to use, as appropriate.

3.2.2.2 Educational Activities

Because the motivations which cause art to be produced are basically the same for all forms of art, and because man has found it useful to bring to bear on his practical world all that he has learned in the development of the fine arts, it is logical and valuable for students to see both fine art and applied art within the same educational context.

In the experiences available in the performing arts, a student can learn by personal trial how complex and yet potentially powerful are the methods of public speaking, dancing, making music, painting and sculpturing, and filming. In applied art experiences, a student can study and develop the ways in which content and form are applied in our practical affairs. Industrial design, graphics, television and radio technology are included in applied arts.

Experiences available in the Fine and Performing Arts can help students achieve a variety of objectives including study of the history and characteristics of other cultures through examples of their artistic expression, development of artistic skills for life-long personal pleasure, and preparation for a career.

A performance, such as an opera or a happening, combining dance, drama, music, film, painting, and sculpturing might be an activity which results from months of preparation by individuals and small groups. Or students might analyze a problem through design concepts, creating drawings, models, prototypes, and printed graphics.

It is hoped that through strong student initiative and guidance from business advisors, a good percentage of the problems approached will be real problems, and that if the solutions are good, they will be used in those situations for which they were designed. This is similar to college situations in which students, who have approached a problem and then have come up with a product or a platform for policy, have carried their solution into the business or political community.

3.2.2.3 Other Resources

The Smithsonian Institution, Corcoran Gallery, National Symphony, National School of Ballet, and Arena Stage among others can provide artists, technicians, and special programs for students and community residents.

Attempts should be made to get resident artists and perhaps a repertory theater into the Center. Some institutions may be willing to enter into the creation and implementation of the educational program.

The natural environment of the parks and wildlife, the man-made environment, the quality of life in Fort Lincoln (whether good or bad) and the people who live that life all will constitute major resources for inspiring the creativity needed in the performing arts.

3.2.2.4 Facility Implications

This Center will need four studios: painting and sculpture, dance, music, and drama. These four studios will share support and seminar/conference rooms with a performance hall.

3.2.3 Science and Health Center

3.2.3.1 Community Activities

The Science and Health Center as an out-patient clinic would provide the residents of Fort Lincoln, and possibly adjacent areas, with preventive and diagnostic medicine, treatment, and follow-up services. One large facility would contain extensive x-ray, laboratory, and other equipment for diagnosis and treatment, patient records, reference library, pharmacy, and emergency room. It would also serve as headquarters for nurses and other health workers who make home visits. All residents, including Fort Lincoln students, would come to this

Center for mental and physical health care and supervision. Small, satellite clinics for care of well babies and pregnant women may be located in or near housing units, and geriatric health supervision may be supplemented by a small clinic in the high-rise apartment for elderly people.

In addition to diagnosis and treatment, the Center would refer patients to specialized facilities in the metropolitan area, hold classes for expectant mothers and people with similar health problems such as diabetes, and collect data for the study of disease incidence and death rates.

3.2.3.2 Educational Activities

The adolescent's natural concern with his maturing body, persistent questions about the effects of drugs, alcohol, and tobacco, considerations of sexual functions and behavior, and relationships with peers, parents, and teachers provide avenues to the instruction of health education, both personal and public.

Medical service staff members - doctors, nurses, and technicians - using actual clinical data and techniques can enrich the traditional subjects of biology and chemistry.

Other topics appropriately pursued at this Center would include child development, nutrition, marriage and family living, and problems of aging.

Laboratory facilities similar to the clinic laboratory would accommodate on-the-job training for Center personnel as well as student instruction. The Center would also offer opportunities to students for volunteer service and part-time employment.

3.2.3.3 Other Resources

The hospitals with which Fort Lincoln doctors will be associated will have nursing aide, laboratory aide, and medical secretarial programs. The development of the Federal City College campus will add to the resources of the secondary program if cooperation is obtained in designing facilities and programs. Attention should be paid now to the existing programs in this area and plans for the future at Federal City College. Mobile Health Testing Units operating in Washington, D. C. may also become a treatment and teaching resource.

3.2.3.4 Facility Implications

A health clinic with a reception area and spaces for medical, dental, and psychiatric services is needed. A chemistry-biology laboratory to provide service to the clinic will also serve as a demonstration lab for students. A separate laboratory for student science projects, including long range experiments, will also be in this Center. Seminar/conference rooms will support these labs.

3.2.3.5 Administration

The Science and Health Center is another area wherein intensive control over daily operations must be practiced. Students certainly can participate in this process, which ought to be viewed as protective rather than manipulative for the purpose of control.

A principle concern in this area will be safety for users and security of drugs and equipment. Because of some of the formal and/or technical activities that will take place, the use of the facility by personnel not pursuing school business directly should be formally scheduled.

3.2.4 Social Environments Center

3.2.4.1 Community Activities

The Social Environments Center would focus on the people, services, and resources related to planning and supervising the development of Fort Lincoln, site management, local government, recreation program direction and park land maintenance, rental offices, and the like.

3.2.4.2 Educational Activities

Consistent with the idea of "school" as the whole environment of Fort Lincoln is the notion that the institutions which make up the fabric of the community are the institutions which should be an immediate part of the educational process. The basic needs of human survival will be investigated and related to the larger issues of community planning, demography, and ecological development and to the actual design, construction, and environment of Fort Lincoln. Students may go into homes to study what is traditionally known as "home economics." Businessmen and urban planners may introduce the students to the organic and technical processes of managing a complex city.

If pollution control, zoning, urban planning, or problems of government are not introduced with a real world reference and with actual experience in the community, such studies will become academic exercises for a teacher with an unenthusiastic response from the student body.

Area students specifically requested courses dealing with current social issues where they would work with community groups to seek solutions and implement programs important to human survival and the quality of urban life: preservation and use of open space, traffic control, waste disposal, repair and maintenance of dwellings.

3.2.4.3 Other Resources

The study of issues dealt with on the unit, building or community level within Fort Lincoln can be extended to the metropolitan area and beyond. Federal government agencies such as the Department of Interior, Transportation, Agriculture, Commerce, and Housing and Urban Development administer programs and conduct research related to social environments on a national scale.

The Smithsonian Institution and many private organizations have special interest in conservation of natural resources and preservation of wildlife throughout the world.

3.2.4.4 Facility Implications

A studio for mapping, modeling, and city and landscape planning, a housing technology workshop, crafts workshop (tied to a commercial outlet), home arts demonstration laboratory, and seminar/conference space are the spaces recommended for this Center.

3.2.5 Economics and Business Management Center

3.2.5.1 Community Activities

The activities related to the Economics and Business Management Center would take place in facilities such as a bank, an office of the Better Business Bureau, employment office, government and private business offices, and private and public legal agencies. Retail stores, repair shops, and restaurants located in the Town Center and throughout the site would serve as demonstration centers and provide part-time employment to students.

3.2.5.2 Educational Activities

Problems of marketing, advertising, selling, managing, financing, and regulating would be considered in theory and in practice. Students would gain direct experience in business operations by managing profit-making enterprises that would serve the school, the community or both: a bookstore, a newspaper, a T. V. repair shop, a baby-sitting service. Local businessmen may act as technical advisors.

3.2.5.3 Other Resources

Commercial and institutional operations in the metropolitan area can supplement the limited resources of the Fort Lincoln community. Students may wish to extend their market to include territory beyond the Fort Lincoln site.

Organizations such as the Chamber of Commerce and the National Association of Manufacturers have headquarters in Washington and can provide experts and information on national business affairs.

International business organizations located in Washington and consumer groups may also contribute on special topics.

3.2.5.4 Facility Implications

The Economics and Business Management Center relies heavily on existing commercial facilities but does need two workshops of its own, one for teaching computer skills and the other for teaching secretarial skills. Seminar/conference space is also needed.

3.2.6 Engineering and Technology Center

3.2.6.1 Community Activities

The Engineering and Technology Center would be the location of the central computer for commercial, scientific and educational use, small scientific research and development firms, offices related to transportation activities (Department of Motor Vehicles, D. C. Transit System, AAA), and engineering consulting firms.

3.2.6.2 Educational Activities

This Center, together with cooperating industry and research and development firms in the area, would provide opportunities to learn about physics, mathematics, advanced science, engineering, electrical systems, avionics, and instrumentation.

Classroom, laboratory, and field experience in maintaining and repairing meters, control devices, electrical systems, and appliances require these activities: testing, diagnosing, disassembling, repairing, cleaning, assembling, adjusting, using specialized tools. Related skills are mechanical drawings and the ability to read diagrams and plans.

The electrical systems, heating and cooling systems, and control and measurement systems used in housing and other buildings on the site will be resources for large scale maintenance and repair work.

3.2.6.3 Other Resources

The National Aeronautics and Space Administration has developed extensive educational programs and materials in the technology of space exploration. The Naval Observatory, computer manufacturing and programming companies, and the American Academy for the Advancement of Science are examples of other agencies that can supply experience, information, curriculum packages, or consultation to students.

3.2.6.4 Facility Implications

The Engineering and Technology Center will contain an electronics and physics demonstration laboratory, a laboratory where student experiments can be set up for long periods of time, an auto shop laboratory adjacent to a commercial service station, a laboratory for monitoring and coordinating school transportation, a model-making studio for transport studies, and seminar/conference rooms. The central computer for the Fort Lincoln Schools will also be housed in this Center.

3.2.7 Physical Recreation Center

3.2.7.1 Community Activities

The Physical Recreation Center would contain facilities for participants in and spectators of individual and team sports. This would be supplemented by commercial recreation and entertainment enterprises such as the Marina, bowling alleys, and bicycle rental.

3.2.7.2 Educational Activities

Facilities and instruction will be available in swimming, including life saving, running, boxing, wrestling, weight lifting, gymnastics, basketball, football, soccer, baseball, tennis, handball, squash, bowling, and golf. Students may choose to participate in intermural or intramural competition. Industrial sports and habits of exercise that have life-long application will be given special attention.

The staffs of the Physical Recreation Center and the Science and Health Center will work closely in diagnosing and treating students with psychomotor disabilities.

3.2.7.3 Other Resources

Joint planning among the community, the Fort Lincoln schools, and Federal City College will ensure that the open land, public recreation areas, and school facilities are maintained for the use and pleasure of all with a minimum of duplication.

3.2.7.4 Facility Implications

To meet the needs of the recreational program, this Center will provide: indoor track and tennis courts; playing fields for football, soccer, and baseball; basketball, squash and handball courts; and a studio for weight lifting, gymnastics, wrestling, and boxing. Space for bowling should also be considered.

3.3 Fort Lincoln Schools and Federal City College

Several references have been made to the role Federal City College can play as a resource for the Fort Lincoln schools. The possibilities for association between these two institutions extend far beyond sharing of facilities and programs.

In the realm of curriculum, FCC faculty can enrich course content by sharing the results of their research in special areas, and serve as consultants to students working on special projects. They might also "teach" in the Fort Lincoln schools on a part-time basis. Joint planning by both school faculties can improve the articulation between high school and college courses, and advanced placement programs can be arranged for individual students. When appropriate, Fort Lincoln students might sit in on Federal City College courses for various reasons: experience might be apropos to a particular program they are pursuing; such an opportunity might be appropriate to life simulation activities; or special segments of a course might be appropriate to some specialized needs of the student.

In the realm of staff development, secondary school faculty members can prepare for advanced degrees, college students preparing for careers in education can serve as interns and volunteers in the secondary school, and a research program can be jointly planned and executed. More specifically, FCC students might serve as tutors in Fort Lincoln schools, particularly at the elementary level. It must be remembered that FCC faculty may serve effectively in evaluating Fort Lincoln innovations and their subsequent dissemination.

3.4 Curriculum Development

3.4.1 Rationale

The assumptions which underlie the Education Plan in general are of specific importance to the curriculum design. The Education Plan is rooted in the idea that learning is an ongoing experience, impossible to confine within concrete walls or barriers of time. Therefore, the educational process at Fort Lincoln is community centered. It is an effort to prepare students for participation in community life and to involve the community in the education of students.

With this aim as a premise, the Center Concept unfolds. The activities in the seven Centers reflect the actual organization of activities in the community.

While the community school functions to make learning a real, relevant process, it must provide basic skills (reading, general math) and promote cognitive development (learning and reasoning) simultaneously. These processes are not independent; each area depends upon growth in the others.

The students' cognitive development encompassing both occupational preparation and academic skills is the primary purpose of the curriculum of Fort Lincoln. All that is learned in these areas can be stated in performance or behavioral objectives in order to make them observable and measurable. Once the objectives are developed, they can be assigned to the Center which would be most likely to contain the activity that will help the student achieve the objective.

There is a variety of sources of objectives, and the number being produced is growing rapidly (see Appendix C). Teachers may choose to adopt and use prepared objectives, to use both prepared and original objectives, or to design courses or units of study using entirely original objectives.

The procedure which follows may be used as a guide for teachers, students, and others to design one course or an entire curriculum. The procedure receives its impetus from Bloom's Taxonomy of Educational Objectives*, and the outcomes are displayed in Figure 1 on page 3-22.

3.4.2 Procedure for Developing the Curriculum

STEP 1 (see Figure 1, column 1)

Bloom describes 14 mental or intellectual processes, sequenced from the simplest to the most sophisticated, that a student will develop as he grows in his ability to gain and to use information. These processes are:

- Defining - Knowing terminology for specific referrents
- Informing - Knowing specific persons, places, dates, events, etc.
- Organizing - Knowing characteristic ways of treating and presenting ideas and phenomena (usages, styles, practices, forms)
- Studying - Knowing processes, directions, movements of phenomena with respect to time
- Judging - Knowing criteria by which facts, principles, opinions, and conduct are tested
- Criticizing - Knowing the methodology with which standard types of research are done

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* Committee of College and University Examiners, Taxonomy of Educational Objectives - The Classification of Educational Goals - Handbook I: Cognitive Domain, ed. Benjamin S. Bloom, New York: David MacKay Co., 1956.

- Abstracting - Knowing generalizations, universals, and abstractions in the field
- Translating Rendering from one language or form of communication to another; putting ideas in your own words
- Interpreting - Comprehending a communication or following directions
- Extrapolating - Determining implications, consequences, corollaries, effects
- Problem solving - Recalling and applying abstractions, general rules, procedures, and methods to appropriate situations
- Analyzing - Breaking down the whole into its elements in order to examine the original structure
- Synthesizing - Putting together of elements to create a structure not clearly there before; combining varied elements of past experience
- Evaluating - Making judgments about the value of materials or products both qualitative and quantitative

The first seven processes involve knowing facts or getting information, while the last seven processes require organizing and applying information. Most students will be able to proceed through all the processes. It is the complexity and sophisticated nature of the material or experience that controls the level of difficulty. Students in the same course going through the same cognitive processes, may use materials of varied complexity. It is through the identification, use, and assignment of instructional resources of varying levels of difficulty that teachers individualize instruction. In addition, much individualization will result from student selection of materials.

STEP 2 (see Figure 1, column 2)

Given the cognitive framework, it is necessary to know next how the cognitive or intellectual process can be demonstrated in an observable and measurable way. It is not enough to say that a music student knows how to read music. He must be able to demonstrate that fact, and he can do so in a variety of ways - by *drawing* the symbols, *labelling* the symbols, or *naming* the symbols. In any one of these ways he is performing or demonstrating a cognitive behavior. Step 2, then, asks the designer to list ways that a cognitive process might be observed behaviorally.

STEP 3 (see Figure 1, column 3)

The first two steps provide a basis on which to organize the content of a body of knowledge. At Step 3 the teacher (or course planner) takes his knowledge of music, for example, and organizes it according to Bloom's taxonomy or Step 1. He asks: what are the symbols or terminology a music student must know? (defining); what are the specific dates, places, persons, and events he should know? (informing); what are the characteristic forms or styles in which music is presented? (organizing); how have forms, styles, and schools of music developed through history? (studying); etc.

A student can use this kind of "syllabus" to decide if he is prepared for an advanced course in music, is lacking an area of information that would help him organize and relate the information he already has, wants to learn part of a discipline but not all (for example, music history but not performance on an instrument), or wants to work on a unit independently.

The content guide for music might look like this:

- Defining - Musical symbols, notation, instruments, major chords and scales
- Informing - Persons, places, names, dates, events significant to history of music and current trends
- Organizing - Characteristic vocal and instrumental ways of treating and presenting music (e.g. a cappella, symphony)
- Studying - Movements and themes that have guided the development of music with respect to time
- Judging - Standard criteria which are used to judge musical composition and performance
- Criticizing - Methodology with which musical research is done
- Abstracting - Generalizations, universals, and abstractions used to discuss music (theme, climax, rhythm, tempo, pitch, key, etc.)
- Translating - Reading music, translating sound to symbol and vice versa, stating musical expressions verbally
- Interpreting - Explaining mood, intent of composers and performers
- Extrapolating - Determining effect of music on events or persons, and vice versa, comparing movements concurrent with musical events
- Problem Solving - Using methods, procedures, and abstractions previously learned, when confronted with unfamiliar pieces of music

- Analyzing - Breaking down a piece of music into its elements to analyze the structure of the piece; or treatment of a piece by performers
- Synthesizing -- Using previous information and experience to write an original piece, perform an original arrangement, or offer an original interpretation
- Evaluating - Judging the value of a work or a performance on the basis of stated criteria

It is important to note that while the cognitive processes are ordered in increasing difficulty, the content at one level is not necessarily prerequisite to content at a higher level. A high level behavior may require some, but not all, of the preceding content. Descriptions of courses where content is based upon high-level behaviors will indicate prerequisite courses or units (see Figure 2 page 3-26).

STEP 4 (see Figure 1, column 4)

With performance and content specified, course or terminal objectives can be written. Under "content" the designer locates what a student is to know; under performance the designer suggests ways that the student might demonstrate that he knows the content. An example objective follows.

> Given three lines of score from Music Book I, the student will label all musical symbols and notation on that page with 90% accuracy from memory.

The performance is label; the content is musical symbols and notation; the condition is from memory. The student is also informed that he must score at least 90 percent on the exercise.

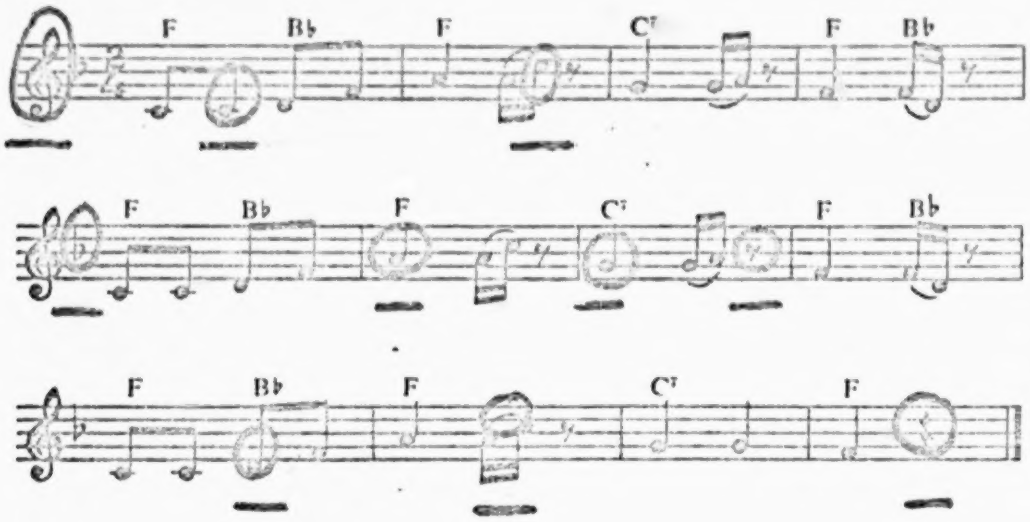
STEP 5 (see Figure 1, column 5)

After the objectives are specified, a designer locates resources for students who are pursuing the objectives. Resources might include books, interviews, films, records, concerts, and performance in a group.

STEP 6 (see Figure 1, column 6)

The final step will be devising tests to evaluate student performance objectives. The tests will follow directly from the objectives. Using the above example, a test would be:

Name the circled symbol or note on the line beneath it.



To repeat the process in brief: cognitive behaviors and suggested performance behaviors are given. The teacher or course designer will determine relevant content (subject matter); state learning objectives behaviorally; secure the materials, resources or necessary experiences; and, finally, measure the degree to which the objectives have been achieved. Results of the test will indicate where additional work is needed either by the student in learning or by the teacher in revising the objective or the learning experience.

Cognitive Behavior	Performance	Content	Terminal Objectives
Abstracting - (7) Knowing generalizations, universals. and abstractions in the field. "isms"	Identifying Reciting Describing Stating Labeling	Communications: Abstractions used to discuss literature, and media presentations (plot, climax)	Given six definitions of abstractions basic to a discussion of the novel, labels each definition with the appropriate term (100%, 3 minutes)
		Fine and Performing Arts: Abstractions used to discuss the arts (impressionism, plasticity)	
		Science and Health: Classifications and abstractions used to identify groups having like members or to discuss ideas (animal phylum or properties like weight, mass, density, color)	
		Social Environment: Classifications and universals used to label concepts in the social sciences, (democracy, race, man, power)	
		Economics and Business: Classifications and generalizations used to discuss economics and business (depression, laissez-faire, income, depreciation). Generalizations used to classify numbers (whole, irrational, mixed).	
		Engineering and Technology: Generalizations used to discuss types of processes, operations, and equipment.	Given a list of five typesetting specifications, labels each with the appropriate generalization (80%, 5 minutes)
		Recreation:	

Figure 1 - Curriculum Development Guide

Resources	Criterion Test Items
Writing Descriptions and Narration (Book, Holt) or Basic Composition Series III (Self Instructional, SRA) or Understanding and Appreciation of the Novel (Record, Folkways)	Label the following with either plot, theme, climax, setting, style, characterization: 1. A mode of expressing thought in language that is characteristic of an author, period, or school ____________. 2. The subject of an artistic representation ____________. 3. The point of highest dramatic tension ____________. 4. A complex of mental or ethical traits marking a person ______. 5. The plan or story in a literary work ____________.
Type and Typography (Book, Rosen) or Printmaking Today (Book, Heller) or Library of Congress or U. S. Government Printing Office or National Geographic Magazine or McCall Printing Company	The following are examples of specifications for typesetting. Select the appropriate generalization for each (weight, face, layout, style, leading). 1. Garamond, Caslon, Latin Wide are types of ____________. 2. Light, Book, Medium, Demibold are types of ____________. 3. Roman, Italic, Condensed are types of ____________. 4. Position and alignment are specified on a ____________. 5. The amount of ____________ is stated in points and picas.

3.4.3 Using the Curriculum Development Guide

As stated above, it is possible for anyone planning courses or learning experiences to follow the Curriculum Guide. Most often, teachers will develop units of study. They may start at any step:

- With content - Teachers will describe the course content for each cognitive behavior then proceed to writing objectives. At this point objectives may be clustered into larger units of study or they may be used by students independently. The teacher will then identify resources for the objectives and devise tests.
- With objectives - Teachers will use many objectives prepared for use in other schools and for other students. It is possible, however, to organize these objectives along the cognitive development scale (see pp. 3-28 to 3-30), and group the objectives into units, if desired. Then teachers will describe the course content, identify resources, and devise tests.
- With resources - Many resources on the site, both human and material, will suggest possible units of study. The presence of a law firm in the office building, for example, may suggest a course in law. Teachers, with the aid of lawyers, will describe the course content, and then they can proceed through the rest of the process.
- With tests - Courses may be organized around tests or evaluations which students must pass for occupational or academic placement in the future. If interviews, for example, are

necessary to get jobs or to enter college, an appropriate course can be planned. Units designed for taking College Entrance Examinations, civil service examinations, or even driver's examinations may result. It is for the planner to define the course content, state objectives, and locate resources. A facsimile of that test should serve for the evaluation of student performance.

- From students' interests - It is assumed that all courses are designed with the intention of meeting students' needs and interests. These needs and interests will be ascertained by Center teams (see Staffing) during the initial planning stages. Sources of information are records from previous schools, surveys of students (see Appendix G, Student Seminar), current manpower reports for job identification, and student participation in the planning of the Center teams.

Additional individual interests will initiate independent study projects. A student and his advising teacher will go through the curriculum development process together. Independent study is open to any student in any subject where he has reached the level of problem solving. This means he knows how to get information (steps 1 through 7), to interpret information, and to perceive causes and effects (step 8 through 10). Other students may work independently, but they will be working on existing objectives with specific resources.

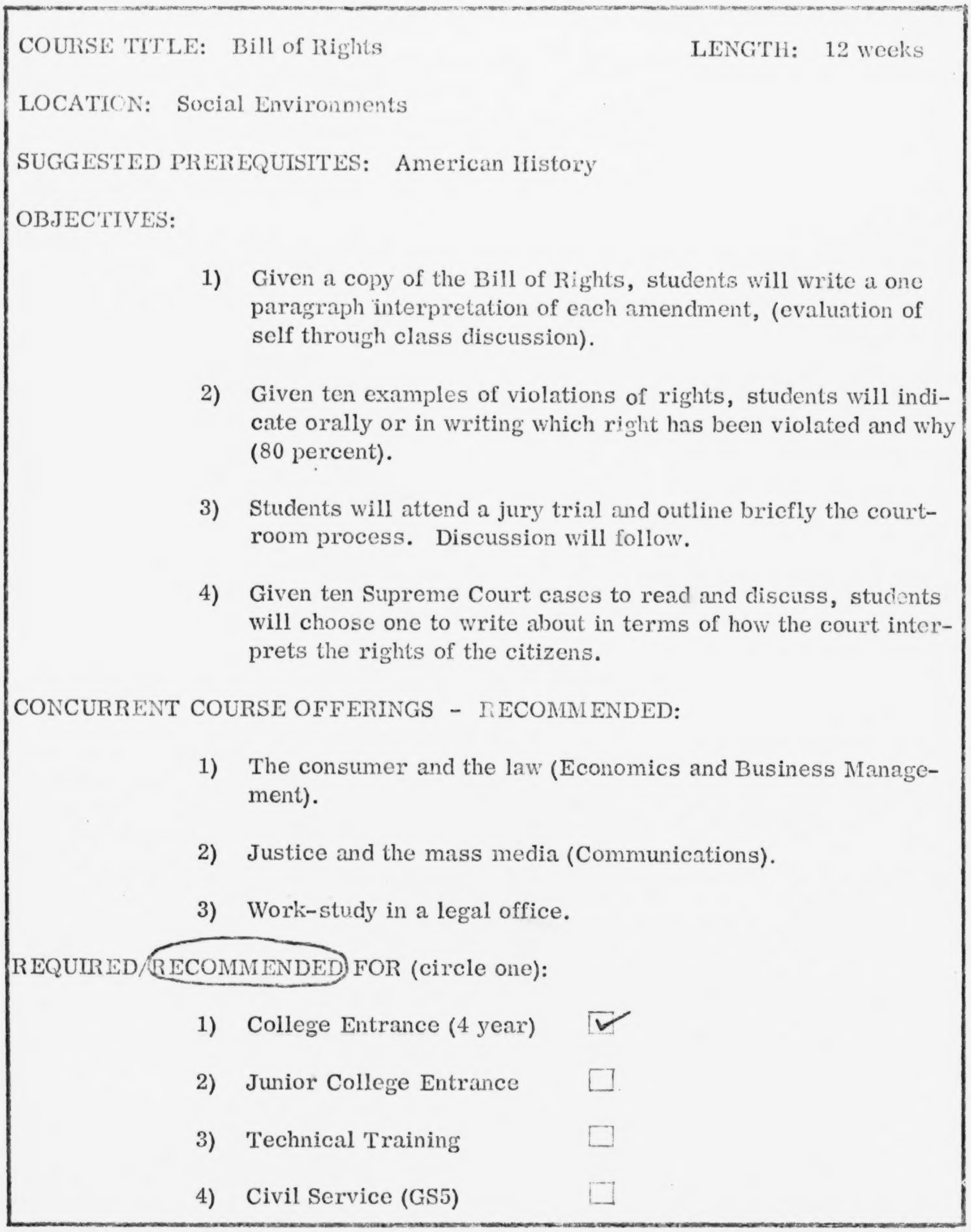
When courses are organized, a course bulletin will be made available to students. A course will be described by a course title, course objectives, suggested prerequisites, length of course, recommended additional courses, location, and requirements the course may meet. Figure 2 is an example of a course description.

When the units of study are complete, representatives from all Centers must meet to coordinate interdisciplinary courses, as suggested in the following example. They must then assign the units of study to the appropriate Centers.

3.4.4 Assigning Units of Study to Centers

When the objectives are specified or selected, resources are secured, and evaluative measures (tests) are devised, the unit of study (course) will be assigned to the appropriate Center. Section 3.2 suggests activities which will occur in the seven Centers. Those activities will guide the placement of objectives within the limitations of equipment, space, and student requirements.

- Equipment - Some equipment, required by objectives in a variety of subjects, will be housed in one Center only. For example, the computer, placed in the Engineering and Technology Center, can still be used by students to analyze data for social studies and scientific projects. To complete objectives in computer operation, students would go to the Engineering and Technology Center for their materials, experiences, instruction, and evaluation.
- Space - Some specialized spaces, required by a variety of objectives, may exist in only one Center. An advertising



COURSE TITLE: Bill of Rights LENGTH: 12 weeks

LOCATION: Social Environments

SUGGESTED PREREQUISITES: American History

OBJECTIVES:

1) Given a copy of the Bill of Rights, students will write a one paragraph interpretation of each amendment, (evaluation of self through class discussion).
2) Given ten examples of violations of rights, students will indicate orally or in writing which right has been violated and why (80 percent).
3) Students will attend a jury trial and outline briefly the courtroom process. Discussion will follow.
4) Given ten Supreme Court cases to read and discuss, students will choose one to write about in terms of how the court interprets the rights of the citizens.

CONCURRENT COURSE OFFERINGS - RECOMMENDED:

1) The consumer and the law (Economics and Business Management).
2) Justice and the mass media (Communications).
3) Work-study in a legal office.

REQUIRED/[✓ RECOMMENDED] FOR (circle one):

1) College Entrance (4 year) ☑
2) Junior College Entrance ☐
3) Technical Training ☐
4) Civil Service (GS5) ☐

Figure 2 - Sample Page

student in Economics and Business Management, for example, needing to tape, broadcast, or videotape in order to complete an advertising objective would go to the Fine and Performing Arts Center where the equipment and sound studios are available. He would bring his materials with him.

- Student Requirements -- Some objectives may be required for work in a variety of fields. Most students will need to complete these objectives and, therefore, could study in several different Centers. For example, science, economics and business, and technology, all demand skills in general math. Furthermore, computational skills can be directly related to activities in any of these Centers. Students would solve equations in science, apply ratios to determine dimensions of a scale model in technology, or compute insurance rates in economics and business. Some resources, experiences, instruction, and evaluation will occur in all three Centers. Students can go to any one Center for general math.

The course designer is ultimately the best equipped to decide with guidance and criticism from others involved in what Center objectives can be accomplished most effectively. Teachers will make this decision for the courses they design, and students will choose the Center in which they will work on independent study projects. It is important to have related resources and experiences available at the location where the skill is to be learned. Most often, one of the Centers will prove to be the best instructional source.

To illustrate how terminal objectives might be assigned to particular Centers, the following objectives from the First Facility have been matched to cognitive processes and are placed in the appropriate Centers.

Communications

- Defining - Has a reading vocabulary of 7,000 - 10,000 words. (Reading)
- Organizing - Writes original paragraphs consisting of grammatically correct sentences and appropriate conventions of punctuation. (Communications)
- Interpreting - Leads discussion among five students: focuses on the main topic, listens to ideas of others, summarizes main points, sees that all participants are included, and brings the discussion to a satisfactory conclusion. The criterion of success may be the leader's own satisfaction with all elements of the discussion given above, consensus of discussion members that the leader included all elements of the discussion listed above, or consensus of an audience (class of students, for instance) that the leader included all elements of the discussion listed above. (Communications)
- Evaluating - Judges the writing of an unidentified author for selected criteria such as clarity, expression of a mood, and brevity, and revises sections judged to be deficient according to the selected criteria. (Communications)

Economics and Business Management

- Organizing - Reads and makes graphs and charts, including bar graphs and line graphs with decimals. (Mathematics)
- Abstracting - Lists orally or in writing examples of economic consumption of goods and services. (Social Studies)
- Translating - Types 30 words a minute with a maximum of two errors. (Communications)
- Extrapolating - Identifies elements of production and technological and locational factors which influence production. (Social Studies)
- Analyzing - Explores occupational choices open to an individual and identifies training requirements for the occupation, availability of jobs in the field, salary levels. (Social Studies)

Social Environments

- Defining - On an unlabeled globe or map, identifies types of land forms and bodies of water. (Social Studies)
- Judging - Respects the natural environment and the beauty of nature as inferred from behavior such as the following:
    - Throws trash and other debris in appropriate container.
    - Preserves and protects flowers, trees, and other living things, plant and animal.
    - Participates voluntarily in class anti-pollution project.

  (Social Studies)
- Interpreting - Lists and explains the rights guaranteed to every United States citizen. (Social Studies)

- Extrapolating - Selects what he considers to be major causes and effects of the Civil War in terms of significant events, groups, and personalities. (Social Studies)
- Problem Solving - Determines distances from simple maps with conversion factors given in feet per inch, yards per inch, or miles per inch. Accuracy to 1/4 inch. (Mathematics)
- Analyzing - Compares and contrasts his own and two other cultures in terms of the family structure, group organization, unique customs, and the enculturation process in each. (Social Studies)

Engineering and Technology

- Problem Solving - Uses a square inch unit to find the areas of simple plane figures such as squares and rectangles. (Mathematics)
- Synthesizing - Draws a floor plan or constructs a three dimensional model of a building. (Arts and Humanities)

Recreation

- Participates in group sports and games. (Physical Education)
- Swims 25 yards without touching the bottom of the pool. (Physical Education)

3.4.5 Cross-Center Communication

By assigning objectives to the appropriate centers, teachers are defining the nature of activities in those centers. They are outlining what resources and experiences are available to students. This does not mean that the curriculum has been departmentalized. On the contrary, in a problem centered curriculum students are free to raise any question or introduce any project. The facilities in the centers provide the resources. Any given activity may require the resources of several centers. For example, a band which practices in the Fine and Performing Arts Center may wish to make a record. They could then take the product to the Economics and Business Management Center for marketing, advertising, and distribution purposes.

Most courses which require organizing and using information (i. e. courses extending beyond learning the basic skills) will require the use of resources in more than one center. A variety of courses suggested by James Fenner in The Record* serve as sample courses and suggest the need for utilizing a variety of facilities. The complete list is contained in Appendix K.

> 1. *ENTERTAINMENT* This course would deal with current films, with TV, with radio (very much a source of adolescent entertainment today: "We're portable!" as the "good guys" put it), records, with the theater, and with the entertainment aspects of the mass-circulation magazines. Sebastian De Grazia[22] underlines the hollowness of our leisure. A course like this one wouldn't cure the malaise he describes, but it might be a start, and it would surely be popular. Its purpose would not be primarily to entertain the students; it would be aimed at helping them to understand and assess and respond knowingly to what the entertainment media offer. Materials would be plentiful; they constitute a major part of the out-of-school life of youngsters already, and in class they could be analyzed as to their methods, their craftmanship, their social implications, their psychological impact, and their visual, verbal, rhetorical, sensory, and kinesthetic structures.

Suggested Centers:
Fine and Performing Ar
Social Environments,
Economics and Busines
Management, Communications.

> 2. *PERSONAL RELATIONSHIPS* This subject would explore the many levels and values in personal relationships. Carl Rogers[23] insists upon the essential importance of self-discovery. "Psychology" would have been the traditional name for a course like this, and there would still be that aspect to it, but in addition it would deal with the style and content of relationships within the family and the peer-group, and with personal concerns such as love, sex, friendship, ambition, the draft, and perhaps it would touch upon the philosophical as well as the psychological aspects of such matters. Here too, the content of the course would be life as students actually and personally live it outside of school. Although it would deal with these situations in general and in principle instead of attempting to guide pupils in their personal lives directly, it most certainly would bear a direct and magnetic relationship to the reality with which they are in daily contact.

Suggested Centers:
Science and Health,
Social Environments

*James L. Fenner, "Reconnection for Relevance: A Proposed New High School Curriculum," The Record, Vol. 71, No. 3 (February, 1970), pages 423 - 438.

3. *MORAL ISSUES* This would be a study of ethics as exemplified by the personal relationships of the previous course, or by political questions, or by school or business problems. The course would aim to present issues and analyze them with penetration and clarity rather than to present solutions. Any kind of written or other material could provide the basis for a sequence of discussions: magazine articles, news items, TV, radio, or film shows, excerpts from philosopical writings, the Bible--whatever. These would be grouped into "topics" representing different *kinds* of ethical issues, and presented in discussion as they relate to adolescent concerns both immediate and future. Here the ethics of business, politics, international affairs, child-rearing, sex, and school could be subjected to the kind of analysis that might make even school look relevant.

Suggested Centers:
Social Environments, Communications, Economics and Busines Management, Science and Health

The curriculum invites, and often demands, much interdependence among centers necessitating a high degree of mobility for students and staff.

3.4.6 Selection of Objectives

It is apparent that the Centers provide a wide variety of activities. An unlimited number of objectives will be collected or produced to further define activity in each Center. How, then, are students, teachers, and parents to select a program (objectives and activities)? A number of factors might influence their decision. Some of these are:

- Future plans. A student who has definite vocational or higher educational goals will pursue a program dictated by his plans. Counselors and teachers in the Center of his interest can guide him through the appropriate experiences.
- Current interests. A student whose future is not certain may have current interests which can guide his selection of a program. He will be encouraged, however, to experiment with new fields of study.

- College expectations. A student who has no future plans may feel secure in pursuing a program which will prepare him for college intrance in order to keep that option open.

  Recommended college entrance objectives will be indicated by the teachers (See Figure 2).

- Sampling a variety of courses. Some students will need the opportunity to explore many areas before deciding upon a program. Many opportunities and much counseling will be available for them.

Regardless of the facts which influence program decisions, students should be aware that it is wise to proceed as far as possible through the levels of cognitive development. The content selected - whether vocational, business, science, or social studies - is important. Equally important, however, is the intellectual ability to organize and process information - whatever the nature of that information may be. Thorough cognitive development in any one content area will greatly simplify studying in other areas. The ability to continue self-education depends largely on the intellectual tools developed during the instructional years.

3.5 Curriculum Content

Beyond the cognitive skills and the behavioral objectives discussed in the section on Curriculum Development are some broader, less precise issues that must be considered if the secondary program is to meet student needs adequately. These issues will be discussed in two parts. The first, which might be called Common Purposes, describes those educational goals which pervade the entire secondary school program. The second, Program Offerings, discusses recommendations for required and optional curriculum components.

3.5.1 Common Purposes

3.5.1.1 Identity

Many students feel that society exerts pressure to cast their behavior into a predetermined mold and to suppress unique qualities which form their identity. They view this process as dehumanizing. At the very least they might claim that the school isn't helping them much to find out who they are and what their strengths and unique potentialities are. One of the purposes of the school must be to help the student explore and express himself. Conversely, not all students have identity problems and forcing the curriculum of identity exploration on the student who knows who he is and where he is going must be avoided.

3.5.1.2 Diversity

It is an assumption that if we look behind the ways in which all the students are alike, we shall find a uniquely developing personality. The interaction between the unique personality and the school experience will determine whether school can serve the purposes of society and of the student. The personality factors are so infinitely detailed that it is impossible for any diagnostician to prescribe a match between a learning approach and a student's learning style.

Not only are the characteristics too detailed for analysis, they change significantly with time and under the influence of seemingly insignificant experiences. A small mismatch between what an individual sees as appropriate for him and what happens to him can ruin an elaborately planned educational encounter. Conversely, an undefinable factor in a teacher or a school can make things work which seemingly could not work. We are constantly confounded by the tyrant who wins performance and devotion from some students and the wonderful person who is an ineffective teacher. We must somehow come to terms with the observation that the same amount of praise will make one student come alive while another shrivels in shame.

The school must offer enough diversity of experience to permit the student-school interaction to work. The interaction will be effective when a small increase in effort will produce a large increase in performance which, on the average, the student and society both find valuable.

The diversity of the programs will have to take many forms and directions. The hours which the school is open will have to be longer and more adaptable. There will have to be programs for working students and work-study programs for young students, pregnant girls, dropouts, etc. There will have to be programs for the solitary genius and the student who is stimulated by groups. These program elements will be discussed in more detail later. The purpose here is to emphasize the need for diversity in order to stimulate independent intellectual development.

3.5.1.3 Intellectual and Social Development

It is the philosophy of this plan that the school should teach:

- Concepts, principles, relationships, facts, laws and generalizations which are considered to be an important part of dependable human knowledge
- Psychomotor skills (e.g., writing, typing, dancing)
- Skills related to information processing (e.g., arithmetic computation, use of computing equipment, computer programming, library research procedures)
- Intellectual information processing skills (e.g., observation, organization of observations, inference, interpretation, hypothesis formation)
- Specific job skills

The school also must provide opportunities for creative expression which synthesizes and uses all the above skills and knowledge which have been taught. These opportunities include the creative arts (writing, painting), the performing arts, political campaigns, social events, extra-curricular clubs, and scholastic and athletic competition.

While it is generally agreed that the school must provide academic opportunities, it is often said that the school has the job of teaching the attitudes which will make the student love learning, be a good citizen, and get along with other people in a crowded world. There are certain objections to making this a responsibility of the school. Teaching attitudes is a form of political indoctrination — not education. Racial prejudice was and is taught as an attitude in many places. Many consider this attitude to have been a vicious imposition on the impressionable minds of young children. Can we be so sure of the virtue of our currently accepted attitudes and values that we can give this job to the schools? We may well teach values which five years or so of rapid change will make obsolete.

A second problem is that attitudes and values are difficult for the school to teach. Youth often rejects the attitudes of the older generation for a variety of reasons. Often the rejection is in direct proportion to the effort made to inculcate values. Many times the school uses the teaching of values as an excuse for its failure to teach more observable skills and knowledge. The teaching of attitudes and values can be an academic version of the Emperor's New Clothes.

However, there is an educational program related to attitudes which can be educationally valuable and which may, if we are correct in our decisions, give our students much of the behavior we seek from attitude teaching. Attitudes are not directly observable; we infer attitudes from patterns of behavior. We cannot, for example, be sure that a student is being respectful or whether he is pretending respect to protect his grade. But we can teach students to be discriminating among various levels of affective behavior. For example, we can present the student with dramatic situations and ask which person behaved most democratically, which person showed the most love of his fellow-man, or which person showed the greatest loyalty.

There is some evidence that while many people use affective words such as loving, loyal, and brave, they do not have a clear idea of the kind of behavior these words imply. There is also the hypothesis that when individuals can make a discrimination they can use the behaviors represented. That is, if a student can discriminate democratic behavior from undemocratic behavior, he can then choose to behave democratically or undemocratically according to his goals.

It is in line with the educational philosophy of Ft. Lincoln that students should be given a broad repertoire of skills, knowledge, and responses. They should be taught to assess the consequences of various courses of action in order that they can use what they have learned to attain their goals with a reasonable knowledge of the probable consequences. This position applies to affective behavior as it effects social development. In this way the school experience interrelates intellectual development with social affective development without attempting to brainwash the student.

The fact that we do not indoctrinate students with the prevailing values of the community does not mean that the adults and teachers need to be ashamed of the values they hold. On the contrary, students' attitudes should be subject to constant analysis and debate in which people attempt to be honest and persuasive — presenting argument and evidence for consideration. In fact disagreement or conflict are likely to become the impetus for a course, seminar, workshop, or group project. Openness will stimulate students' interest and invite total personal involvement while permitting every staff member, community member, and student who has an opinion on certain issues to share and express these ideas. This is one of the opportunities which the school owes the student.

3.5.1.4 Expression of Youth Culture

It is of concern to many people that the attitudes and ideas of young people today are causing them to reject the environment and institutions of which they are a part. The elements of youth culture are not common to all the youth in all areas of the country. However, certain manifestations of these attitudes and ideas can be identified in cities throughout the nation. Students are dropping out of school, are seeking sources of escape from oppressive climates and are growing more disillusioned with their ability to effect change.

It cannot be denied that there are many positive elements and realistic demands being voiced by students. When recognized as laudable, these characteristics can be used to advantage in the school curriculum and operations. Students are:

- Curious - Students want to explore and develop capabilities far beyond those traditionally demanded at educational institutions. A career is important, but creative expression, political involvement, and examination of social, religious, morale, and economic issues is a must.
- Informed - With the vast amount of knowledge students have today, they feel that their opinions are as valuable as the opinions of older adults. Since decisions at the school, community, or the national level are likely to affect them, they must be allowed to participate in and to learn about the decision making process.

- Communal - The sophisticated nature of many students causes them to reject a number of the groups and organizations traditionally provided for them. The Latin Clubs, honor societies, sports teams, and pep clubs will satisfy the needs of many. However, students who are politically active and involved in combating social ills would find much in traditional schools that is irrelevant. When homes or communities reject them, they band together outside of institutions in order to find support and encouragement for their ideas.
- Honest - More than ever before students are questioning the purposes behind demands made upon them. They are rejecting school rules and refusing assignments not suited to their needs. From teachers, they seek truthful and objective information; in curriculum materials they want all sides and biases represented. In effect students are asking for openness and intellectual freedom and an environment which does not impose conformity and irrelevancy on them. D. C. students have voiced opposition to grading, required courses, outmoded materials, and oppressive rules which are a few manifestations of the adults' lack of confidence in the students.

The secondary plan for Fort Lincoln provides mechanisms which will alleviate some of the tension arising from conflict between home and school, students and staff. These mechanisms are a dynamic curriculum, extensive counseling, student participation in planning and operations, and facilities conducive to socializing and to group activities. Students are invited to develop the curriculum and courses along with teachers, to organize a student government adequate to their needs, to seek guidance and to expect frankness from all staff members and students, and to utilize their social centers for purposes that they determine. With increased freedom and independence, the staff and community will expect to find a student body mature and capable of analyzing options and making choices. To do so, staff, community and students will want to coordinate their efforts and provide support for the school.

Through these mechanisms, Fort Lincoln will discover a school that provides time, space and resources to relate to their concerns. Youth culture will not be characterized by dropping out and seeking escape. A school setting sensitive to their needs will allow a youth culture to develop within the confines of the school community.

3.5.1.4 Preparation for Employment or Further Schooling

Traditionally these are the principal tasks of the high school in terms of the amount of instructional resources and student time devoted to them. Recently the scope of each of the above categories has broadened. The definition of a job can include anything from the Peace Corps to work in a militant organization and the number of schools offering post-high school education and the variety of courses they offer have increased tremendously in the past few years.

The colleges are an example of a rapidly changing situation which can have important consequences for school planning. The school must prepare the student to meet the entrance requirements of the kind of college he wishes to attend. Thus, traditional courses such as English literature, algebra, trigonometry, biology, chemistry, and physics should be available. There is evidence that college and university admissions requirements are becoming less rigid. An analysis of admission policies of schools of higher education in the Washington area (see Appendix E) shows that a number rely primarily on standardized test scores as a measure of a student's ability to do college level work. Others are willing to rely on student performance during a trial admission period. This is also in line with the student comments during the seminar that they do not wish to take standardized tests such as SAT and CEEB.

In addition to offering some traditional courses, the schools must be open to the idea that traditional content can be learned in a variety of other ways, and organized in new patterns and relationships which are meaningful to present day students. It also admits the possibility that learning occurs in places other than classrooms. Thus, work experience and the opportunity to learn vocational skills in the Fort Lincoln schools should be available to all students. It would be unfortunate to restrict all the students who wish to attend college to a limited, inflexible program which they consider dull and irrelevant just when the colleges are becoming receptive to new ideas.

Work Experience

Work experience is one way to meet these requirements. The opportunity for work experience should prevail for students who plan to continue studies after high school and for those who plan to seek immediate employment and as one part of regular course offerings.

Work experience should be closely related to the life-simulation program. Students who feel sure of their career objectives should begin to examine more closely aspects of that career such as turnover rates, salary ranges, occupational hazards, opportunity for travel, and chances for advancement. Students who are unsure of their career objectives should investigate the above factors as well as the content of a variety of jobs for which they have some interest and aptitude.

Career opportunity trends such as those presented in Appendix D will provide a framework within which decisions might be made regarding career possibilities. Work experiences should be coordinated with organizations outside of the school so that students can use up-to-date equipment under realistic job settings, accommodate work-study programs in order that students can gain job skills while they earn money, provide programs for students who are working full time and must fit their high school work around their job, have standards of workmanship and technical knowledge which will give the students a sense of self-respect and competence, and provide an opportunity for students to work on projects of personal value and interest.

The concept of learning centers and the integration of school and community resources facilitates this goal since it requires extensive movement of students throughout local employment establishments.

It is vital that the students who select work experience programs be closely supervised and evaluated at frequent intervals by both the employer or his representative and the school. This would be structured as part of the student's overall counseling, and is necessary to ensure that he is not placed in a situation which may not provide the necessary experience or which may prove detrimental to his mental and physical well-being. There should also be provision for the student to evaluate his program.

It is recommended that no extensive formal vocational program as currently conceived be offered at Fort Lincoln. Instead, all students should be prepared to qualify for both post-high school education programs and an entry level job. The following are arguments supporting this conclusion:

- Employers rarely specify entry level job skills beyond ability to read (5th grade level), understand and follow directions, and execute simple arithmetic operations (make change).
- Trends point to longer educational preparation before job entry because of the "knowledge explosion" and the increase in jobs requiring technical and professional skills.
- Aspirations of disadvantaged groups seeking jobs that offer greater status and higher salaries are rising.
- The number of junior colleges and technical institutes is increasing rapidly as are the number and variety of their vocational programs.

However, the school can and must provide abundant opportunities for students to learn marketable job skills. These skills would be stated in behavioral terms, for example: the student will be able to type 60 words per minute without error. The learning materials and activities necessary to achieve this objective would be specified and made available for selection by all interested students according to the curriculum development model outlined in Section 3.4. Students aiming to qualify for a civil service position after high school, planning to type their college term papers, or preparing to take a part-time job while attending high school might select this objective.

The school cannot be expected to anticipate all entry level skills that students could possibly need or want. However, several alternatives might be employed for meeting individual student needs as they arise.

- Arrangements could be made with other educational institutions who maintain specialized equipment.
- An employer and the school could design a cooperative program for one or more students.
- A qualified community member might be engaged on a part-time basis to teach a specialized skill.

In addition to formal learning opportunities, the school must maintain other services to meet student needs in career preparation. Information about careers, job opportunities, and job requirements must be constantly available and updated to provide students with alternatives of career selection.

A job placement service to coordinate student and community needs would enhance the likelihood of students having meaningful job experiences. Job opportunities within the school should be identified and listed in the student placement office.

The school can facilitate the students' vocational experience by providing for flexible attendance. Some students may elect to work mornings and attend school in the afternoon. Other students may prefer to alternate three months work and three months of study. A number of participants in the secondary seminar wanted school credit for on-the-job training.

This approach to vocational education offers the following advantages:

- It decreases the likelihood of separating academic and vocational subjects.
- It increases the range of opportunity for exploring and sampling career possibilities.
- It delays the time when a student must make a commitment with long-term implications.

A number of high schools are exploring the role of vocational preparation. Nova High School has developed a program which prepares every student for post-high school education and entry level jobs. Appendix A contains a description and analysis of this program.

Occupational Education

Should there be a decision to establish formal vocational-technical training in the Fort Lincoln schools, one contemporary model for program structuring based upon vocational clusters can be offered. Clusters are comprised of courses and related experiences within groupings of vocations requiring similar knowledge and skills.

The rationale for clustering is to bring people in comparable programs together and to maximize a student's options to move vertically and horizontally through a variety of programs on the way towards career ladder achievement. The formal curriculum is organized around student aptitudes and interests rather than common usage of facilities. It is believed that the cluster concept creates a more responsive environment composed of students, faculty, counselors, and administrators with various technicians and paraprofessionals who operate conjointly in an educational setting. (A suggested model for course clustering appears in Appendix J.) Within this setting increased identity and unity of purpose are more likely to occur along with greater opportunity for exchange between students and faculty, both of whom are engaged in a learning process.

Opportunity is provided for students to transfer from one program to another on a voluntary basis so that growing feelings of frustration and/or failure can be dissipated and displaced. Frustration is replaced by feelings of success when students find that they can move into related programs that maximize their own potential and allow for personal achievement. Program clustering not only brings together students with common interests but also attempts to provide the fabric within which a student can choose to go between and among programs in his quest for that "packet of learning" which best fits his needs. Deliberate attempts must be made to integrate the vocational programs with other program offerings.

The Center Concept strongly reinforces the implementation of the cluster concept. Particular experiences required as offerings within a particular vocation can be made available in the community if they are nonexistent within the formal "school" program. The grouping of objectives and activities within specific Centers also facilitates the "clustering" of specific experiences within groups of vocations.

The requirement that an occupational program adapt readily to changing market demands is consistent with the individualized nature of the Fort Lincoln secondary program. Student needs will play a central role in structuring learning experiences within each Center, and course offerings in the occupational clusters should reflect employment trends. If the Center and cluster concepts are truly complementary, continual revision of courses will take place.

Perhaps the most important benefit realized from providing occupational course offerings within the Center Concept is that the many specialists and physical resources within the broad community can be used to supplement and enrich the school offerings.

3.5.1.6 Life Simulation Program

The life simulation program is designed to help the student explore his goals and the possibilities and probabilities of various aspects of those goals.

The life simulation program offers the chance to explore a wide variety of life styles. It involves the student in explorations of choices and consequences; for example, if the student chooses to smoke pot, he can be informed of the most probable outcomes. If the student chooses to marry as a teen-ager, probable outcomes in terms of a limited career and unstable marriage might be projected. The student is involved in both probable and improbable courses of action and their consequences.

The life simulation program will be implemented in the Student Unit Team, a group of 15 students and a teacher meeting twice a week for a total of three hours. One purpose of the team will be to facilitate the problem-solving and decision-making processes as they relate to future plans and current curriculum programs. In addition, the Team will be concerned with all questions of mutual concern. Section 5 contains a description of the Student Unit Team.

3.5.1.7 Guidance

It is almost impossible for any counselor to know enough about a particular student or about the range of options open to him to make decisions for him. Therefore the counselors should not have the power to make either course or career decisions for a student. (In fact some arrangement should be made to ensure the independence of student decisions.) It is the responsibility of the counselors and the education program to make sure that the students have enough information and information processing skill to make their own course and career decisions. The younger students should have their parents involved in the decision process.

Perhaps there should be a rule to the effect that a student can require the administration and staff to participate in a dialogue regarding his individual program until he is satisfied. This dialogue may require research and effort on the part of the student so that the dialogue is not simply a way of making the staff "jump through hoops." On the other hand, the staff must not be allowed to dismiss student complaints simply on the grounds that the complaints are either trivial or impractical. By seriously engaging in a dialogue almost all student complaints and concerns could be transformed into an important educational experience.

There should be a system of appeals in both directions. A student should be able to appeal an unsatisfactory response on the part of the staff and the staff should be able to appeal students' needless demands upon their time. The panels which will decide all appeals should maintain a balance of power among students, administration, teachers, and perhaps citizens and parents outside of the school.

The students should be given the option of dropping courses at any time. However, there should be some penalty or effort required of the student to prevent frivilous changes of program.

The administration does have the responsibility of analyzing course groupings for cost effectiveness. If there are not enough students interested in taking a course, the school should prepare a program which relies upon independent study techniques and does not require as much teacher time.

A program of sufficient flexibility to encompass all the options and opportunities envisioned will require a sophisticated management system. The success or failure of the school will depend on the extent to which the management system is under the control of the students it is designed to assist. Forms, quality control, feedback measures should all involve students both to lower the cost of the system and to ensure that the system is not used for administrative pressure.

A computer program, while not essential, could be of great help in managing a system which attempts to provide personal education for each student. All records of an individual student should be open to him and his parents. Further the student and his parents should be informed of all those who have access to the records and of any special use which is to be made of his records. Research should be encouraged as long as the staff, students, and parents are kept fully informed even if such information interferes with the interpretation of research results.

3.5.1.8 Grades and Reporting

Grades serve a generalized information purpose. In a stable society, they had many incentive and sorting functions. In a rapidly changing society, they are the single most corrosive instrument of the schools. They become meaningless to many because of the erratic method with which they are determined and because of the many uncontrollable factors which enter into them. Students think of the school as a system to be outguessed rather than a place for them to acquire needed knowledge and skills. Nevertheless, many students need and want a grading system.

The solution is relatively simple and has proved workable.

- The purpose of tests should be almost exclusively to inform the student of what he knows and can do and what he does not know so that his next learning tasks can be determined. Test anxiety decreases tremendously when the only purpose of the test is to establish what should be learned next.

- The primary method of reporting to the student and to the society is a behavioral report of the objectives which the student has attained. This is similar to the driver's road test, Boy Scout tests, or the test which many workers must perform in order to reach certain job levels. It is performance oriented and while subjectivity by the teacher is never absent, it is minimized through behavioral objectives which the student can understand and through pretests which inform the student of the general nature of the task before him.
- Grades and competitions of various kinds should be developed for those who select them, just as truck drivers and lumberjacks enter competitions to determine the "best." No one must be required to enter a competition which will rank his complex individuality on a numerical scale. Standardized tests and special achievement tests can satisfy any student's need for competition.
- Care should especially be taken with regard to a student's creative efforts — from a classroom question to a poem or a painting. Creative efforts should be given specific criticism in order to help the student to develop in terms of *what the student*

is trying to do. Giving a grade to a creative effort which is independent of the judgment of the student seems completely inappropriate. Of course, a student can occasionally be asked to perform to the teacher's specifications and be judged on how closely he was able to anticipate and match the teacher's expectations.

It is anticipated that most colleges and other institutions would be happy to receive a report based upon behavioral objectives, teachers' evaluations in narrative form, and performance on comprehensive standardized achievement tests. Parents will accept such reports if the objectives are written in a language which they can understand. A transcript of the intended form gives the new school more useful information than a set of letter grades which cannot be meaningfully interpreted for future assignments or placement.

Many students in secondary school do not want their parents to become involved with their school performance. Therefore, it is recommended that students at some point in their high school career become responsible for determining whether information about their program and performance is sent to parents or others who request it. This step can be taken after evidence of responsible behavior has been shown and perhaps with a parental release form signed. Of course any serious change in a student's performance or behavior should be cause for a teacher-parent consultation.

3.5.1.9 Discipline

Discipline should be arrived at by constant negotiation. Almost every discipline problem can be turned into an educational experience, and it is the responsibility of educational leadership to ensure that disruption is not used as a way to avoid learning rather than an instance of learning.

There is a tendency to become increasingly restrictive whenever a problem arises. This is to be avoided at all costs since once a cycle of repression starts it engenders alienation. Alienation tends to break out into further incidents which trigger further repression. A constitution for the school must be set up,and there must be rules which permit change and which protect individuals from the tyranny of the majority. Community and parental attitudes must be consulted and integrated into the rules and procedures of the school.

The teacher must be protected and be permitted certain options in dealing with disruptive situations, and yet the students must be permitted some form of due process to present their view of a situation. The list of problem situations can be continued, but very little specific can be said.

It is recommended that this is an area where a survey of current practical working solutions would be of great help. After that only a sensitive leader who is truly on the side of learning and the students can hope to deal with the volatile problem. The students must feel that the school belongs to them for their purposes in preparing for adult life. At the same time the adult community should become more involved in the life of the school to promote the sense of the school belonging to the larger community.

One high school has developed a constitution for the governance of the school which attempts to include representatives of all constituents. This can serve as a model for Fort Lincoln school although other more suitable models may appear in the intervening years. (See Appendix F.)

3.5.2 Program Offerings

In order to fulfill its obligations to society and to the individual student, the school must offer a program which combines required and optional activities. The required elements are those which help the student to prepare for his adult roles as citizen, worker, and family member. The optional elements are those which help the student develop his unique talents and interests.

3.5.2.1 English

English should be a required course for all students in the Fort Lincoln secondary school. However, one must face the problem that the term English is so broad that it must be extensively refined and interpreted so that it can be useful as a guide to the activities which will take place and the abilities which the student will attain.

The reading and interpretation of literature (printed material) should be closely geared to the students goals, interests, reading ability, and persistence. Thus English literature should be individualized to a much greater extent than is currently done. The decisions as to what should be read should be shared among the students and staff; some selections should be read by an entire group because the students vote for them; some should be read by the entire student body because the staff votes for them. Some material should be read by everyone so that the group can have a common basis for instruction.

The way in which material should be read should be allowed to vary widely from the student who does not complete a book "because I just couldn't get interested in it" to the student who finds the same book "the most fascinating thing I ever read. I just couldn't put it down."

As much criticism as possible should be generated through discussion among the students. The professional staff should always make very specific comments in evaluating students' reports. Teacher comments should be primarily for the purpose of feedback so that the student can see his own work in perspective and so that the student can evaluate his reading with a view to future changes. The staff should not use specific comments and suggestions as a way to rank students according to some generalized concept of good and bad.

Essentially the distinction should be between reporting and editorializing. The teacher can express her values, opinions, and taste (as can the students) as long as it is labelled properly and as long as the judgments are not used to punish students through low grades, derision, or other means. Depending upon the student, the effects of teacher or student observations and opinions will vary widely.

If a student produces a response such as a book report or an oral discussion of a book, it is a reasonable educational task to shape and improve that response. It is more difficult if the student is reluctant to participate and if work is only produced under the threat of punishment. Thus, students should be encouraged to increase their output of material that they read and evaluate. If student output and editorial quality (spelling errors, incomplete sentences, etc.) decreases, this should indicate to the staff that its interaction with a student should be examined.

Much of the material which students read should be (within broad limits of current standards of acceptability) selected by individual students. The student choices should then be the basis of analysis or discussion. Student booklists should be contrasted with traditional booklists. The student can play the popular game of listing the ten books he would take upon vacation or to a desert island, and different lists can be discussed, compared, and criticized. The discussion and evaluation of an individual's reading and choices in reading is almost certain to lead the student into neighboring fields and new fields. Science fiction reading can lead to science reading and vice versa; historical novels can lead to history. The entry of a student into new fields of reading can also be encouraged by reading which is mandated by the staff.

There are two kinds of required reading. The first is reading which is part of a course; the student is aware of the reading list before he signs up for the course. There should be courses of this kind for the student who is seeking a traditional program, for the student who wants the credit for such a course, or for the student who wants to read the kind of material on the list under the guidance of a teacher. The second kind of required reading is intended to draw a student into new areas. To achieve its purpose, it must be done in a way which is acceptable to the student. This means that various forms of negotiation and trading-off must be used. In general, there will be an optimal ratio of required to self-selected reading for each student. At this optimal level the student's reading and reporting will be kept at a high level and he will gladly accept his quota of required reading because he has learned to respect the teacher's judgment, the teacher's judgment is not threatening to overwhelm his own, and there is the promise of novelty and change of pace.

Different kinds of reading material require different kinds of reading. In particular, reading in which logical development must be closely followed such as in a set of directions or a physics text requires careful retentive reading. The test of careful reading is the ability to carry out the directions correctly; for example, assembly of a child's toy. The difficulty is that a class test of such abilities can create more damage than good. Alternatives are self-chosen tests in which the student tries to improve on his own terms, observation of the student in a practical diagnostic situation with specific activities to develop concentration, interpretation, analysis, etc., and challenges to the student to discipline himself to do something which is difficult.

Reading poetry, songs, humor, science fiction, polemics should all be encouraged. Students should have their own organs of criticism and evaluation which are open to all students. They should be asked but not forced to keep a permanent notebook of all their reports. Group discussions and individual student evaluations should constantly be directed into new dimensions by teacher questions.

- List you five favorite stories (novels, poems, etc.)
- How many were written by men?
- If they were all written by men (or women), do you think that fact is significant? Explain.
- Do you think you could recognize whether a story was written by a man or by a woman? Try it and report on your success.

- Are the stories you like about ordinary people or about powerful and/or wealthy heroes? Explain what you think is the reason for this.
- Do you like stories which take place in local surroundings or in exotic, strange environments? Give examples and explain.
- Arrange the five stories in order from best to worst in developing character which seems real and alive.
- Arrange the five stories according to whether you identified yourself with one of the characters. Name the characters.

The list could be extended. The purpose of the questions is to challenge the students and to have them examine their reading in new perspectives. Therefore, like reading, the use of such questions must be keyed to the extent that students respond favorably to the questions and the activity. If their reading moves to higher levels and if they engage in debate and analysis enthusiastically, then the technique is being properly used. Part of the problem can be solved (as in the case of reading lists) by having courses in which the student knows in advance that he will be required to do a great deal of analysis. In other courses guidelines should be established for adjustments to individuals and freedom of a student to reject an activity.

While reading is a rich and rewarding intellectual and emotional activity, it is essentially a passive occupation. For this reason in the above discussion of reading it was difficult not to emphasize the activities of criticism, analysis, comparison, and other forms of evaluation which require a more active response from the student — something that shows that the student has transformed what he has read in some way in order to make it his own. It is to be hoped that reading for personal pleasure is not lost, but that the student learns to use reading for a variety of his own purposes even when he is absent from stimulation and discipline of the classroom.

Stimulating, guiding, and improving all forms of student writing offer the greatest scope for the flexibility and ingenuity of the teaching staff, the administrative staff, and the student body. If there can be criticism and discussion which encourage rather than put down, and if the best that each student can do can be praised without losing contact with reality, then the school will be fulfilling its role.

A key measure will be the amount and diversity of writing by each student and by the entire school. People should write letters, lessons, reports of meetings, interviews, and events. There should be newspapers, periodicals, plays, collections of poems, descriptions of experiments, directions for technical operations, and descriptions of new systems, new courses, and new ways of doing things within the school. We recommend that evaluation be specific rather than for the purpose of establishing the best. Students who wish to engage in literary competition should do so as an extra-curricular activity in the same manner as the chess or tennis team.

Students should be encouraged to write diaries. Whenever a student has a complaint he should be encouraged to write a report incorporating background reading on the subject and his proposed solutions. This should not be done to put off consideration of student concerns but to develop the skills of analysis and scholarship as tools for dealing with real problems of immediate concern.

The student must be allowed to be himself. Improvement should come from an inner development of the student's standards, goals, and taste. The creative writing response must first be raised to a high level of occurrence (sheer volume and fluency), and then to higher levels of clarity, grace and style. This poses a tough and demanding challenge for the teacher. Meeting the challenge requires personalized education since writing is extremely difficult for most people since with each sentence they reveal themselves to a possibly critical world. School must be a place where one's fragile efforts are treated with care and where rampant weedlike growth is pruned without killing the plant.

The advent of video recording and casette recording, as well as the general trend from laboring jobs to knowledge jobs, places a greater emphasis on communication by speaking. In addition, an increasing emphasis on interpersonal communication requires that speech be used with discrimination and sensitivity. Thus speech should be an intrinsic part of the secondary school program. Oral reading, group reading, singing, taking a part in plays, giving reports, debating interviewing, acting as a master of cermonies, acting as a chairman of a meeting, teaching a class, tutoring another student, arguing for a position in a meeting, making a political speech as a candidate or to support a candidate, making an argument before a faculty committee, should all be considered part of the speech program.

The technology of video and audio tape offers the means of establishing a record which can be used for diagnosis and feedback in the same way as a written document. Each student should probably have his own audio tape recorder and approximately every 30 to 50 students should share a videotape recorder.

3.5.2.2 Social Studies

Social studies should be keyed to the methodology of social science analysis and research and to the interests and problems of the students and the faculty. The traditional curricula of history, geography, economics, government, sociology and psychology should be available as formal courses if there are enough students who request them. Even if only a few students want a formal traditional course which emphasizes the basic principles and generalizations of a discipline, it should be provided on an independent study basis with tutorial supervision.

It is to be expected that for most students a social studies curriculum of involvement and challenge will be more appropriate. What are the topics which are of concern to the young adult in the high school? Dope, getting and holding a job, discrimination in local administration, the self-defeating effects of the welfare system, marketing discrimination against the poor, and many other problems and topics can serve as entry points with high student interest. Once the students are involved they can be challenged by the methods of the various behavioral sciences (e.g., How do you know? What is the evidence? What techniques have worked with this kind of problem in the past?) Furthermore, the curriculum of involvement can be carried through to an action component in which the students generate proposals and projects for creating opportunity and change both in the school and in the community. Within the school the social studies program can be an agent of continuous self-examination and change.

3.5.2.3 Science

Science is a particularly difficult problem at the secondary school level. Students who have not acquired the prerequisites, concepts, and attitudes for in-depth study find the typical course in chemistry and physics to be hopelessly abstract and difficult. On the other hand, the role of science in our present society makes it important that our citizens have some knowledge of science in order to play an intelligent role in discussion and resolution of public issues.

Another reason for emphasis on science is the increasing number of jobs which require a technical and scientific background. This suggests some strategies which can be used to increase the effectiveness of science instruction.

- Science courses should not be required courses, but a full complement of courses should be available. (e.g., BSCS biology, Chem Study and CBA chemistry, PSSC and Project Physics, Introductory Physical Science, and Intermediate Science Curriculum Study.)
- An integrated science program should be developed which moves from physical science to biological and social science and back on a shorter cycle than one half or one year. The reason for this is the

hierarchical nature of science. That is, chemistry tends to build on physics concepts; biology builds on physics and chemistry; ecology, geology, and social sciences tend to integrate and build on the basic sciences. On the basis of this argument, one would have physics followed by chemistry and these two followed by biology. Usually the sequence is the reverse, and this is justified on the belief that biology is more familiar, more obviously relevant, and hence more interesting to most students than the physical sciences. An integrated course which alternates among the subject areas as concepts are needed in order to move to a new level of sophistication, will solve what is a major problem for many students.

- A diagnostic battery should be developed which will inform the student and the staff when a student is missing elements which have been assumed to be in the student's background. Individualized instructional procedures and materials should be used to teach these prerequisites. Wherever possible the individualized assignments should be accomplished concurrently with the student's advanced program so that he does not feel that he is in a remedial or slow section of the student body.

- Much more science instruction should be initiated by and related to technical vocational training and interests. An automobile engine can be an excellent physics and chemistry laboratory. Nursing and health situations offer many opportunities to teach biology and chemistry, as well as physics. An analysis of all the important major technical and vocational fields will reveal that almost all objectives in the field of science can be related to some job skill or job operation.

3.5.2.4 Mathematics

Many of the points regarding mathematics instruction parallel those for science instruction. Students tend to see math as irrelevant and disconnected from the real world in spite of the application problems in most math books. Yet mathematics is becoming increasingly vital to decision-making in a complex society. Techniques of data processing and analysis through communications, computers, and information retrieval systems mean that more and more information is available in mathematical and numerical form. Obviously, such information is useless without analysis by humans.

Any student with mathematical skills has a decided advantage in seeking employment. Hence a serious effort should be made to develop mathematical skills in the student body.

One of the problems in mathematics instruction seems to be a mismatch between the attitudes and techniques of the mathematics instructors and the goals and attitudes of the students who are interested primarily in the applications of mathematics. Instructors usually emphasize the logical structure of the subject, building proofs and formulas from the minimum number of assumptions and with a minimum reliance on confirming evidence from the real world. In fact, most mathematicians insist that true mathematics (pure mathematics) does not necessarily relate to the real world. This point of view is sufficiently important to future mathematicians and to the general education of anyone who respects the intellectual position of mathematicians that a mathematics curriculum organized according to the best thought of mathematics educators (e.g., the SMSG program or an excellent traditional program) should be available to the Fort Lincoln students.

However, a mathematics instructional staff should be recruited which is sympathetic to the need of most people to learn mathematics in a useful context (e.g., W. W. Sawyer's Mathematics Through Science in the SMSG series) and to verify mathematical conclusions by their ability to predict results in the real world. There is an engineering curriculum for high schools which has been described as basically a program of mathematics applied to realistic useful situations. This program should be examined for possible adoption and the general approach should serve as a model for applying mathematics to problems arising from other fields such as electronics, medicine and health, auto mechanics, and social science.

Specific aspects of the program should more or less parallel those outlined for science. A special word should be inserted with regard to statistics, the use of computers, and computer programming.

Statistics should be taught as a basic course in its own right. Students can study statistics on a very sophisticated level even at very early ages. However, every course should involve as much statistical analysis as possible without the situation becoming too contrived. For example, a course in foreign language can examine the frequency with which certain forms are used, make an analysis of student errors, or determine reliability of certain suggested measures of evaluation of student performance. In addition, there should be special statistics courses for students who engage in various career patterns. Statistical analysis is an especially useful form of mathematics if it is coupled with basic ideas of reliability, precision, accuracy, and validity. These ideas permeate almost every kind of creative task outside of pure art.

Statistics should almost invariably have a computer component. The Fort Lincoln High School should have, if possible, a variety of computers ranging from simple hand models to the most sophisticated that the budget can buy, rent or borrow. It may be possible to have an arrangement with some company that has a computer not being used to capacity.

Within a school any number of problems can be analyzed as research projects by students using the ability of the computer to seek out multiple correlation. The computer should be an important part of the life simulation program that should be developed primarily to serve as an information retrieval tool. An essential feature would be ability of the computer to produce printed matter for the student to use. Almost no student should complete a program without some knowledge of computer capabilities and some practice in using them for his own purposes. Each student should also learn the limitations of the computer and be able to give examples of the garbage-in and garbage-out phenomena.

All students should have opportunities to use the computer for their own purposes, such as developing a program for analyzing athletic events and planning for future games, designing simulation games, or making a dating program for matching students of the opposite sex. Wherever possible the students should be encouraged with the guidance and approval of local industry to work on real business and community problems such as optimal plant design, where stores should be located to best serve a neighborhood, and analysis of traffic patterns.*

3.5.2.5 Foreign Languages

Foreign languages should be elective, and foreign language classes should be carefully organized for cost effectiveness. The more well defined a student's career aims and the more closely there is a match between his career aims and his ability and task performance, the less the school staff need concern itself with the student's decision as to a foreign language. The less a student is sure of his eventual career and the less his abilities seem to match with his career choices, the more the life simulation program should pay attention to the foreign language problem.

If a student, for example, is not sure of what he wants to do and he has a high aptitude for foreign languages, it would be reasonable to ask him to spend some time exploring an introductory course in a foreign language which has some relevance to his interests. An especially appropriate vehicle for such students might be an introductory course in comparative linguistics. A student who is adamant in his refusal to study any language or to be involved in any foreign language studies might be asked to prepare a paper or some other kind of report defending his position with evidence both about himself and the reasons why such study would not be useful to him.

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* Specific examples of using the computer for everyday purposes are described in the Life article, "The Handy Uses of a Home Computer." January 30, 1970, pp. 48-51.

A different problem arises from those students who want to study a language for which there is no teacher readily available and few other students who want to take the course. The strategies for dealing with this problem are several. The students might go to a neighboring institution that is offering the course (junior college, college, special language school). The students may organize and teach themselves with the help of correspondence materials, independent learning materials, and qualified, but uncertified, outside instructors, (e.g., exhange teachers or students). These programs would have to be monitored on a tutorial basis by the staff. Students might study independently using the resources just described. Students actually could be sent abroad as part of a work-study program to acquire a skill in the language of a particular country.

The goals of a foreign language program should be carefully prepared and examined by each student. Entirely different kinds of performance and abilities may be expected from the student who wants the course in order to qualify for a given university, a student who needs a language in order to take a job in a foreign country, and a student who plans to study linguistics in college. These goals should eventually be expressed as a set of performance specifications for each student who studies a foreign language.

Research in language study shows that total immersion in an environment which requires that language is the best method of acquiring conversational capability. For students who are trying to learn to speak a language, there should be times when only that language is spoken. Students who are primarily trying to get a good score on the college entrance exams should have a program which specifically meets those objectives. In other words, an attempt should be made to prepare an environment which will promote the kind of language learning which the student needs for his own goals and career plans.

Language learning is subject to large variability in natural aptitude among students and in the kind of behavior which is required for different purposes. There is no magic formula which will meet the needs of all students within a single course or a single program of courses.

If possible, special rapid training courses should be available for secondary school students and adults who suddenly find a need for a certain level of language competence. A student who sees a short-term need for a specific language is an extremely dedicated and interested student.

3.5.2.6 Physical Education (Health, Sex Education, Drugs)

Physical education should be closely integrated with the rest of the school curriculum. This is especially true of biology and social studies. Sports and physical education can be an important positive influence if they are kept in perspective and used to illustrate principles from other areas of study. The program should be highly individualized. There should be extensive periodic diagnostic testing of the physical condition and psychomotic abilities of each student.

Each student should be able to receive serious instruction in any sport in which he is interested, and both intermural and intramural competitive events should be available. In sports (such as track and field) which do not require expensive equipment for individual participants, teams should have a no-cut policy and even team members of limited ability should receive attention and guidance from the coach. Videotapes should be employed to enable each student to observe his own performance.

Students are concerned about their health. Therefore, there should be a program which relates health information to diagnostic information about each student and to the biology and social studies programs. If possible doctors, nurses, and public health professionals should conduct parts of the program and supervise and serve as resource persons for the physical education teachers. The program should permit student concerns and questions to set some of the curriculum and be the basis of discussion.

Sex education is a controversial subject. Teenagers indicate overwhelmingly that they want and feel that they need factual information on this subject as was evidenced at the student seminar (see Appendix G). The solution to the problem of the subject being taught improperly is to open up the classes and have more than one responsible adult present and perhaps have some adults in the role of students. The teaching must be detailed, honest, complete and must attend to the emotional and interpersonal aspects of sex as well as the clinical physical details. As with other aspects of physical education, the program should be integrated with the biology program so that human sexuality and reproduction can be put in the general context of biological laws and be used as illustrations of those laws.

The problems of drugs must also be honestly and completely taught in communities in which this is a problem or a matter of probable encounter by the students. The teaching must be honest in order to maintain credibility.

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If the program is not believed completely by the students there will be a tendency to try a drug under the influence of the argument that the teachers are exaggerating the effects and dangers.

In the drug education program the legal aspects as well as the medical, biological, and social aspects of the problem should be dealt with. Policemen, lawyers, city officials should be invited to speak with students to exchange views and attitudes. Parents should participate in meetings to build a community attitude to counteract the emotional attraction of the teenager or young adult who is attempting to induce young people to take drugs.

4. FACILITY PERFORMANCE REQUIREMENTS

4.1 Introduction

Places where we live and work are never static; we affect the people and things within our environment. If we can learn to accept the idea that our initial perceptions and conceptions of people and surroundings will always need to be updated, then we will have a logical buffer against disappointments when change occurs. Anticipation of unpredictable change urges us to lay aside the hope of finding perfect, final solutions. Instead, planners try to create organic systems which, by continual adaptation to change, give birth to new systems. It is this attitude toward change which has led to the idea of an organic or growing school for the Fort Lincoln secondary program.

The framework or inner structure of the FLNT secondary program is the Center Concept, and the facilities for the program must be as capable of organized change as is the content. There is a continuum of choices for the facility planners concerned with planning an organic facility. At one end is the need to lease facilities (which can be left when a program no longer requires that space) or to build space which can be converted to noneducational uses and rented or sold when no longer needed by the school. (This is similar to a plant dropping those leaves or branches which have become inefficient, as newer or better located members appear). At the other end of the continuum, one can equip and furnish educational spaces with materials that promote flexibility by anticipating change, just as a plant is flexible, bending in the wind, growing in the direction of light, and opening and closing petals and leaves as natural conditions change.

Throughout this buildings-to-furnishings continuum, the educational environment must expect, allow, and encourage a wide range of behavior from its inhabitants. Some aspects of environment need to be taken care of -- a finely upholstered living room or fragile art objects, for instance. But it would be an unbearable strain if one always had to be careful and protective. Nothing would get done if the environment required an elaborate amount of maintenance. One need not give up those things which require care, nor should one have to give up the freedom that comes with environments that require little consideration, tolerate abuse, and allow for quick, inexpensive rejuvenation.

Environmental ranges are necessary in education as anywhere else. Students cannot learn to care for fine things where no fine things exist. Nor can a student train his body in a variety of ways if his environment only allows him to sit still. No one can hope to develop appropriate responses to educationally intimate situations if the environment never allows them. At every decision point in the design process, one must ask whether the educational environment allows a truly reasonable and useful range of behaviors as a response to the design problem.

The facility recommendations made here, then, are to be interpreted as a guide to identifying good spaces, not as a recipe for constructing perfect ones, although new construction may be found necessary when proper spaces are not otherwise available.

4.2 The Centers as a Network

The secondary educational program, which is spread out into the residential, public, and commercial areas of Fort Lincoln and even into the far reaches of the District of Columbia, needs some element to make it cohere as an entity which is psychologically tangible to the students. By carefully locating a network of spaces for administering, counseling, studying and relaxing, a sense of continuity can be achieved within the Center Concept.

A network is a system of communication and services concentrated in nodes and connected by lines of movement, ordered in a way that the nodes are logically served by the connections. Each node in this network contains space for administrators, counselors, staff and student study, and relaxation. Nodes are designated as "communication, individual, education, and social services space" or C.I.E.S.S.S. C.I.E.S.S.S. supports the educational program, individual study space, and social space with some kind of snack facility readily available.

Administration and counseling of this secondary program is decentralized. Teams of administrators and counselors, responsible for specific groups of students, are located in the C.I.E.S.S.S. rather than in a central administration office. This will allow for more diversified and creative administrative practice, and will allow persons in administrative capacities to remain personal rather than symbolic figures for the staff and students who work with them. Office space needed for an administrator or staff member is created from one or several individual work spaces, as described in Section 4.3.1. Conferences and meetings can be held in a conference/seminar space, an open space, or in an individual work space.

Teachers and students who want work space, an office, a piece of turf, etc., have a choice of selecting an individual work space as described in Section 4.3.1 or of constructing their own spaces in the available open space.

For personal areas that are to be created in the open space, raw material must be provided—both sophisticated prefabricated units like Hauserman schoolmate panels that can be used in many ways and really raw materials such as wood. Individuals can bring other materials from their homes, or from scavenging, to construct personal areas. Rather than spend large amounts of money in the original construction and furnishing of the C. I. E. S. S. S. areas in Fort Lincoln and D. C., a fund should exist that can be drawn on by the community, staff, and students to acquire other raw or finished materials. In addition, the buildings and grounds department may maintain a warehouse of equipment and furniture which can be drawn on much like a library.

Experience with operations of the First Facility will be useful in structuring an interpersonal environment in which cooperative activities such as those previously described can occur. In the earlier plan, the mutual assumption by staff, students, and custodians of the responsibility for manipulating and maintaining the Centers was discussed. Such a cooperative venture requires development of new attitudes in people, a real concern by staff and students for regular maintenance of facilities, and an understanding by operations personnel of their roles vis-à-vis facilities in serving and complementing the educational program.

Building maintenance and operation staff should "float" from Center to Center, with specific assignments for daily cleaning stemming from the nature of the Center being served and the personnel currently available to service the facility at the time of its incorporation into the educational program.

The purpose of the floating person is to serve as a "consultant" and assistant in the manipulation of facilities. Again, regular cleaning expectations and assignments must be developed as operations begin and the specific details of the facility can be examined.

Whether one takes an established "individual work space" or creates his own work space in an open area, the function of that space is basically one of support for study or investigation. There are several other ways in which a C.I.E.S.S.S. support works. Telephone connections to the resources in the audio-visual center and library within the Communications Center will assist researchers trying to locate sources of information, and will enable remote selection of tapes to be played over coaxial cable or closed-circuit television on screens at selected work stations in each C.I.E.S.S.S. Terminals for computer access also will be available for students and teachers at these nodes.

The support the C.I.E.S.S.S. provides for relaxation is in the form of spaces that are conducive to informal discussion and social exchange. Since much of our culture's patterns of socializing use eating and drinking as a means of arranging such social encounters, it is logical that lounge or relaxation areas should include varying degrees of food service. Some C.I.E.S.S.S.'s may contain only vending machines and a hot plate and refrigerator, while others, because of their geographical location and expected loads, might contain cafeteria and restaurant facilities.

We may find after operation begins, that some C.I.E.S.S.S.'s may begin to locate around commercial eating establishments. As mentioned in the Comprehensive Plan, there could be several commercial eateries in the larger community which may fit in nicely with the suggested food services concept, simultaneously serving the social/emotional development of the entire school community.

What does a C.I.E.S.S.S. look like? They are not a series of identical spaces, repeated in different locations. They are not egg cartons with neat grooves for each student numbered and labeled, each space like every other. They are more like cliff dwellings. A cliff is provided and some cave spaces are carved out of it to suit the grouping patterns that develop and to accommodate the activities of individuals, couples, cliques, and "tribes." The space and material provided is malleable and is molded by the minds and habits of its users. The hermit scholar builds himself a sealed and silent work space where he can read and type and remain undisturbed by friend or foe. Peer pressured people group in threes or fours, take an open space, and claim it as there own by continual use, signs, and changes that they make in that space's organization. Some have no interest in creating or maintaining personal spaces. They can find niches, individual work spaces, floor space, or wall space already established. A table in a hamburger stand with finger tip controls in the juke box is the perfect floating station for another kind of person. It is important to remember that teachers too work and relax here, carve their worlds, or use it as they find it.

Where can space for a C.I.E.S.S.S. be found? In downtown D. C., a rented loft of 2,000-3,000 square feet may provide the raw space or cliff for a gathering of students and staff. In the residential units of Fort Lincoln, an unfinished floor of an apartment building might provide good space. In or near each of the Centers, space must be found or created for personal and group study, eating, thinking, and undirected being.

4.3 A Generalized System of Performance Requirements

Before describing particular facilities to meet the needs of the program, it is useful to describe the range of considerations that will be referred to in the facility requirements. One can refine one's attitude toward space and what it can do for the learning process by describing in a generalized fashion the technical and environmental characteristics of different categories of space which will reoccur in each center. By organizing the design criteria for performance requirements in a generalized system, the specific facilities performance requirements for each area - in the form of symbols - become a simple, and therefore useful, planning tool. This system considers the following six points:

- General space or area designations
- Methods of partitioning space
- Posture positions
- Lighting
- Equipment and furnishings
- Services, acoustics, and square feet

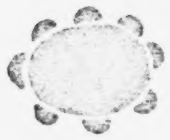
Since the D.C. Public Schools will be purchasing equipment and furnishings to be placed in many facilities, the descriptions of different areas and categories of space will be useful. They could well lease available commercial space in the FLNT neighborhood and town centers or first floor space in apartment houses and use common equipment and furnishings to adapt the space. This can only be done if the performance requirements for educational space are carefully described and the space available can be successfully adapted.

A discussion of the six points mentioned above follows with a symbol attached to each distinct category.

4.3.1 General Space/Area Designations

General architectural concerns for types or categories of space can maintain throughout the educational facilities and will contribute to the continuity of development even if the facilities are designed at different times, with different architects, and adjacent to or including different community resources.

Categories of space are: seminar/conference room, individual study space, studio work space, workshops, laboratories, circulation space. (Other spaces are more specialized and will require descriptions when they occur in each Center.)



4.3.1.1 Seminar/Conference Space

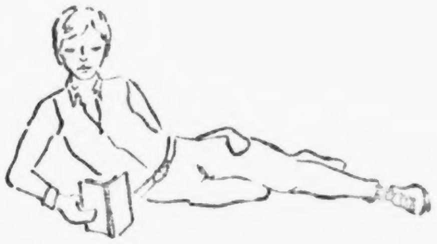
The educational plan describes activities in every Center which necessitate a wide range of small group instruction areas. These areas will accommodate up to 15 students and will all but replace the traditional classroom.

- Arrangement

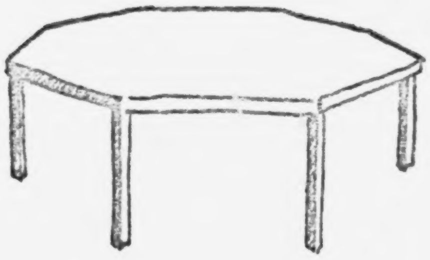
  The characteristics of this type of space are different than the arrangement of a typical classroom in that the participants in a seminar must see each other as well as the teacher (in the cases where there is a teacher). The activities planned will range from intense conversation and presentation to much more relaxed group study. The arrangement of the space should accommodate this range.

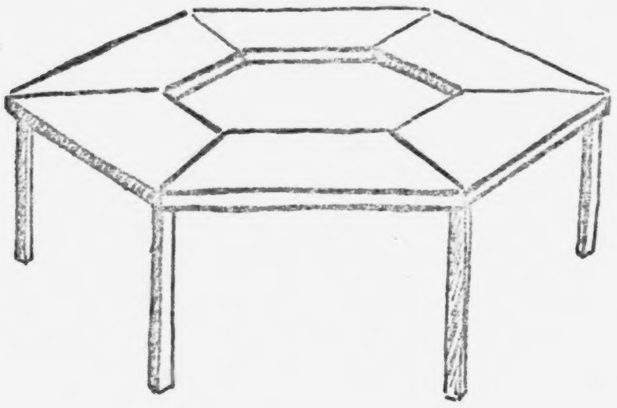
- Furnishings and Equipment

  The seating should be comfortable without extravagance. The chairs should be arm chairs, permitting or even encouraging a relaxed pose:



A large table allowing for clear sight lines from each position should be fixed in the center of the room (with appropriate audio-video hook up attached if necessary). A table can be made up of smaller, trapezoidal sections to encourage rearranging into smaller groups.





Other than tables and chairs, the furnishings should be limited to storage in casework, either movable or fixed. A carpet is recommended to improve the acoustic control in the space as well as to increase the comfort level. Vertical surfaces should be versatile and varied; some will be used for display, some for writing and projections, and some for additional textures and/or further sound deadening surface.

- Lighting

This space in most cases should have the capacity for being totally blacked out for the screening of films. Natural light should be introduced where possible in order to allow the students visual communication with the outside. This can be done with a vertical window, a clerestory, or skylight. Care should be taken so that there is not too much window space producing an excessive amount of glare.

The artificial lighting in this space need not be as even or as intense as in general work space. Consequently, a combination of incandescent and flourescent lighting should be considered with highlights provided by incandescent spots or floodlights on vertical surfaces or in the center of the space.

- General Considerations

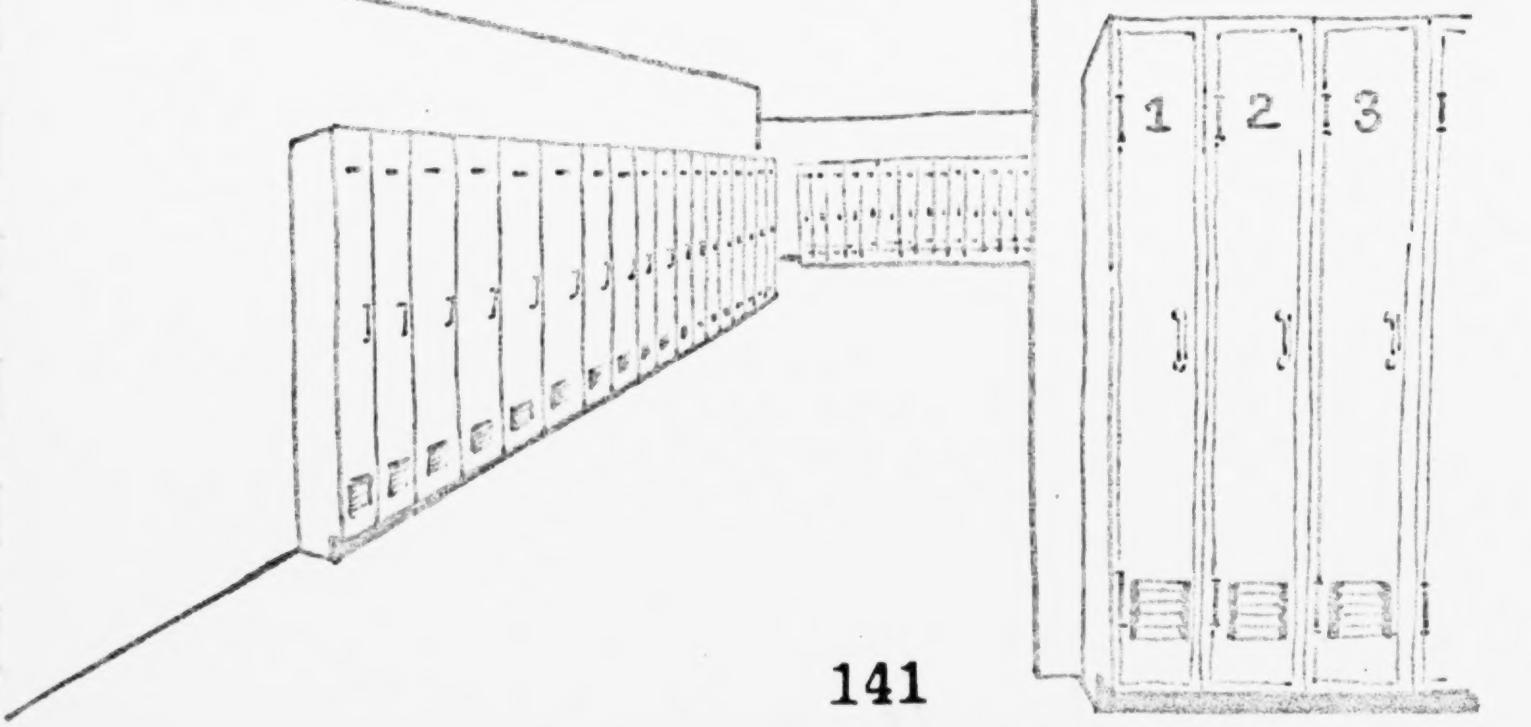
The seminar/conference space need not be a room enclosed on four sides and entered by a door. Probably in most cases this kind of rigid planning along with the visual and acoustic separation that it implies is unnecessarily rigid. Instead, the requirements and recommendations can be observed in an open space through the use of versatile partitioning systems referred to in section 4.3.2.

- Dimensions

  This space is to be limited to a small number of students. It should have the quality of a comfortable, controlled space. The ceiling could be lower than in other areas (if there is to be a concentration of similar spaces). In planning floor areas for such activities one can limit the square footage to approximately 25 square feet per student, making a range of between 360 square feet to 400 square feet for a group of 15 + 2.

4.3.1.2 Individual Study Space

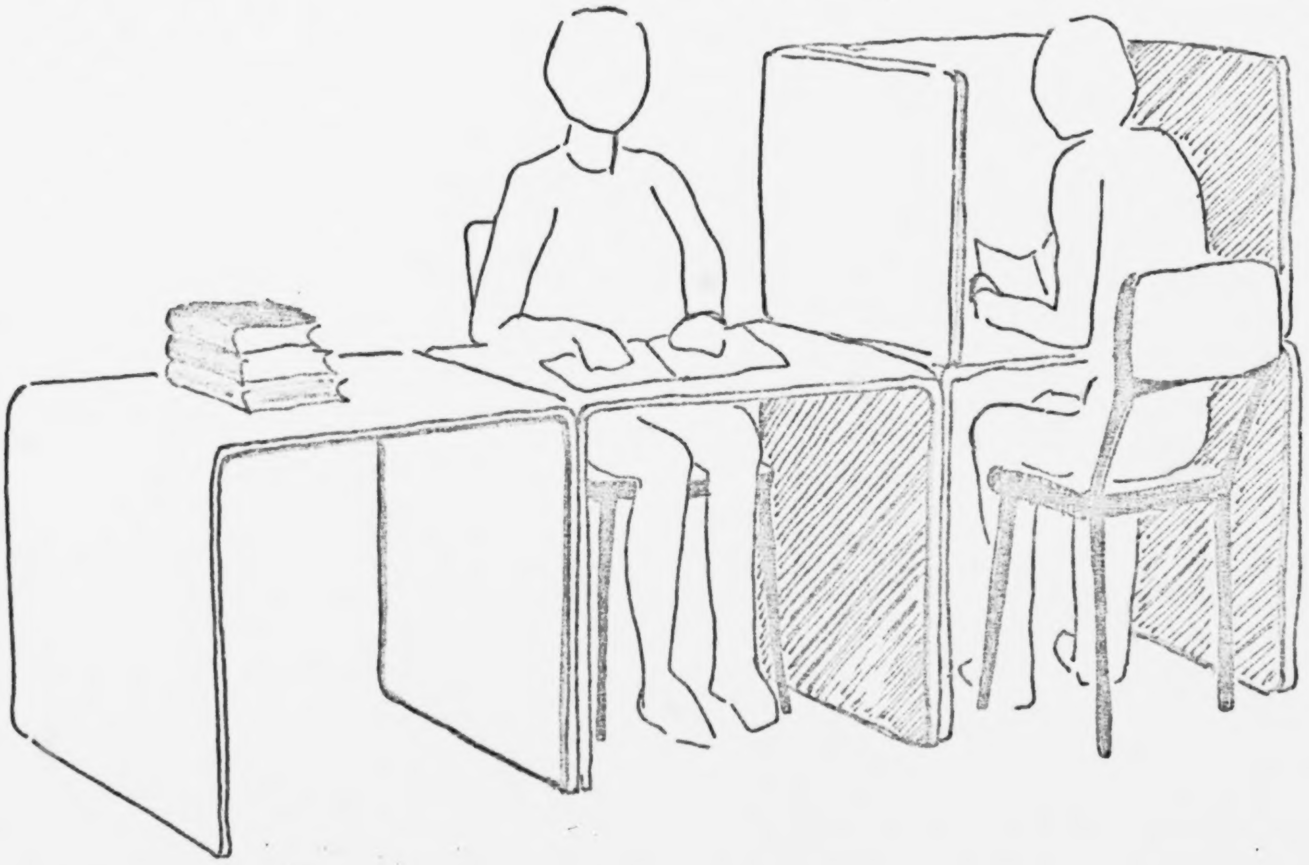
Sociologists studying the activities of man will relentlessly maintain that every individual must have a place to call his own where he can arrange his belongings and be relatively sure that they will not be disturbed. In our societal organization, the office worker has already won the right to a private work space--it is more efficient! Gradually teachers are being allowed to take over a small piece of territory in order to be able to work with greater efficiency as well as have a "place" of their own. Students have, heretofore, been reduced to a locker 1' x 1' x 6':



Since a good deal of students' time will be spent outside of the "classroom" pursuing an individualized program of study, the necessity of having an individual work space is most important. Such a space will be located in a variety of places throughout the entire FLNT community. The decentralized education and information center, for instance, will be an excellent place for concentrations of such space.

- Arrangement

  Some of the options for ordering the personal space must be left to the inhabitant. How a particular space is arranged by an individual and how a number of these spaces are arranged by a group must remain flexible and the furnishings must encourage reorganization. Hopefully, if these spaces are combined, the resulting space for two, three or ten students will be better and more exciting than individual spaces. This would suggest a number of carrel arrangements:



- Furnishings and Equipment

A horizontal work surface with lockable storage for approximately eight linear feet of books and possessions is the base for an individual study unit. A chair should be straight-backed for good support while writing but should be comfortable (with arms) for more relaxed reading, talking, etc. A vertical storage section should be available for the storage of coats and/or equipment. Visual barriers should block distractions while the student is seated, but need not be higher than 50 inches. Reference is made in Section 4.3.2 to some possibilities for carrels.

It is hoped that additional solutions for carrel space or individual study space will be conceived by equipment manufacturers as well as students to increase the variety and versatility available.

- Lighting

In addition to general lighting for the total area, individual lights and electrical outlets must be provided at each station. The light may be either a flourescent strip or an incandescent lamp for lighting the horizontal work surface. The electrical outlet should accommodate filmstrip viewers, tape recorders, etc.

- Dimensions

Adequate space for a working carrel, including the circulation space common to adjoining carrels, should be at least 28 square feet and probably closer to 36 square feet. When students are to be involved in horizontal surface work other than reading and writing (such as an experiment or a drawing) the space should be expandable or larger common space should be available.

Adults using similar work areas will have similar requirements but with more storage capacity and space for counseling or tutoring footage, range 36 square feet - 40 square feet.

4.3.1.3 Large Group Areas

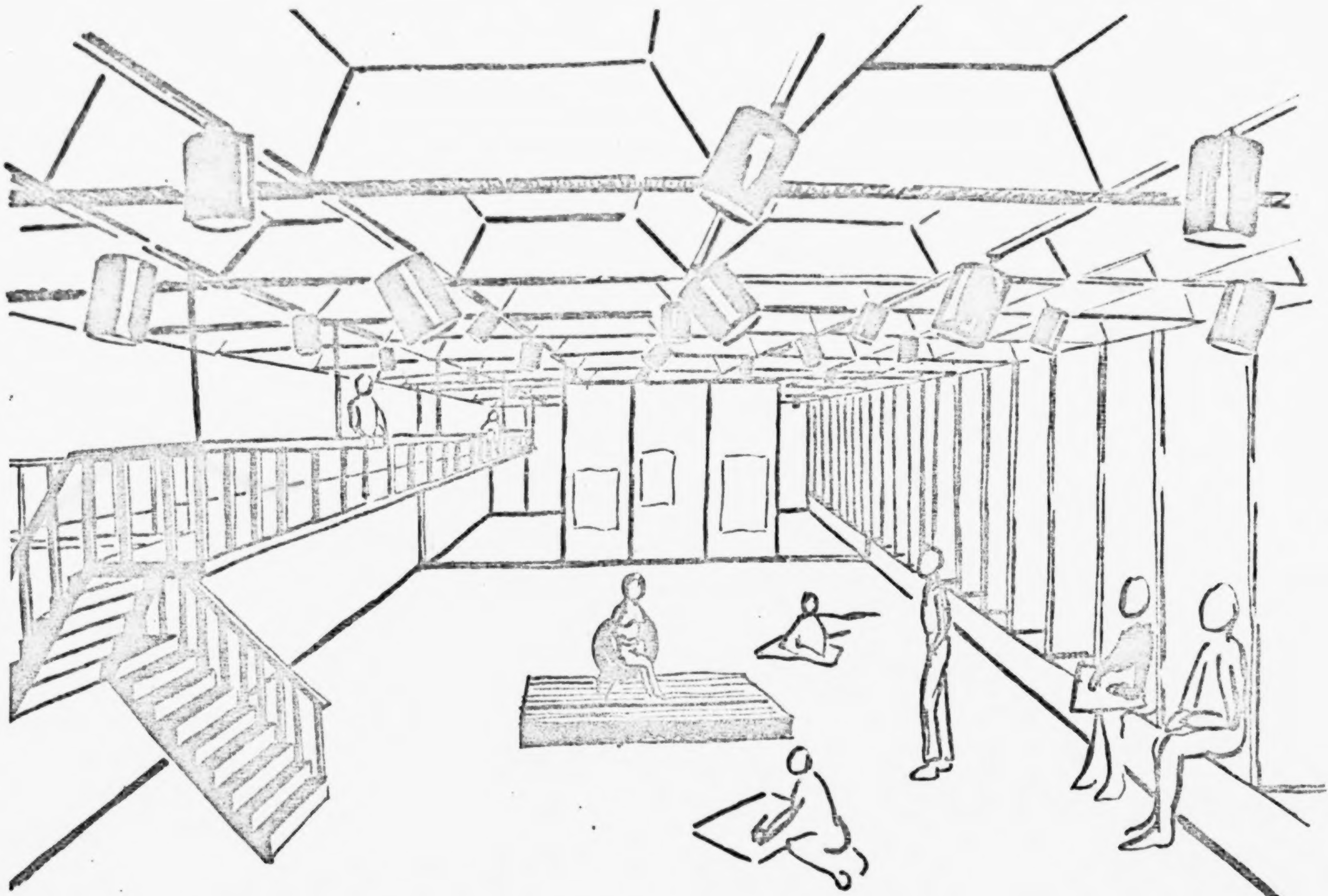
A distinction can be made among categories assigned to large areas according to their "level of technology." This concept has to do with the amount and sophistication of the mechanical systems brought to an area. One can build up the level of technology from a base of adequate light and heat to a communication system, hot and cold water supply, gas, chemical waste lines, etc. Each space described below will have a particular level of technology which will be further specified in Sections 4.3.5 and 4.3.6. There are three general large group areas described below having three different levels of technology: a studio with a low level, a workshop with a medium level, and certain laboratories having a high level of technology.

Studio

A studio is a large volume of versatile space with a relatively low level of technology. The space is for dancing, painting, sculpturing, drawing, model making, displaying, etc.

- Arrangement

  The usefulness of a space such as this is in its versatility. The arrangement of partitions will be changed frequently. Portable stages of varying heights can change the horizontal surface. Wall brackets affixed to vertical standards embedded in the wall should allow for changes and additions on the vertical surfaces. In machine rooms, this type of structure flexibility is often provided by using platforms for additional equipment or having additional pipes hung from the ceiling. Also, one finds a different kind of flexibility backstage for varied lighting and set designs. In a studio, the space will be designed by the participants and changed as the activities change.

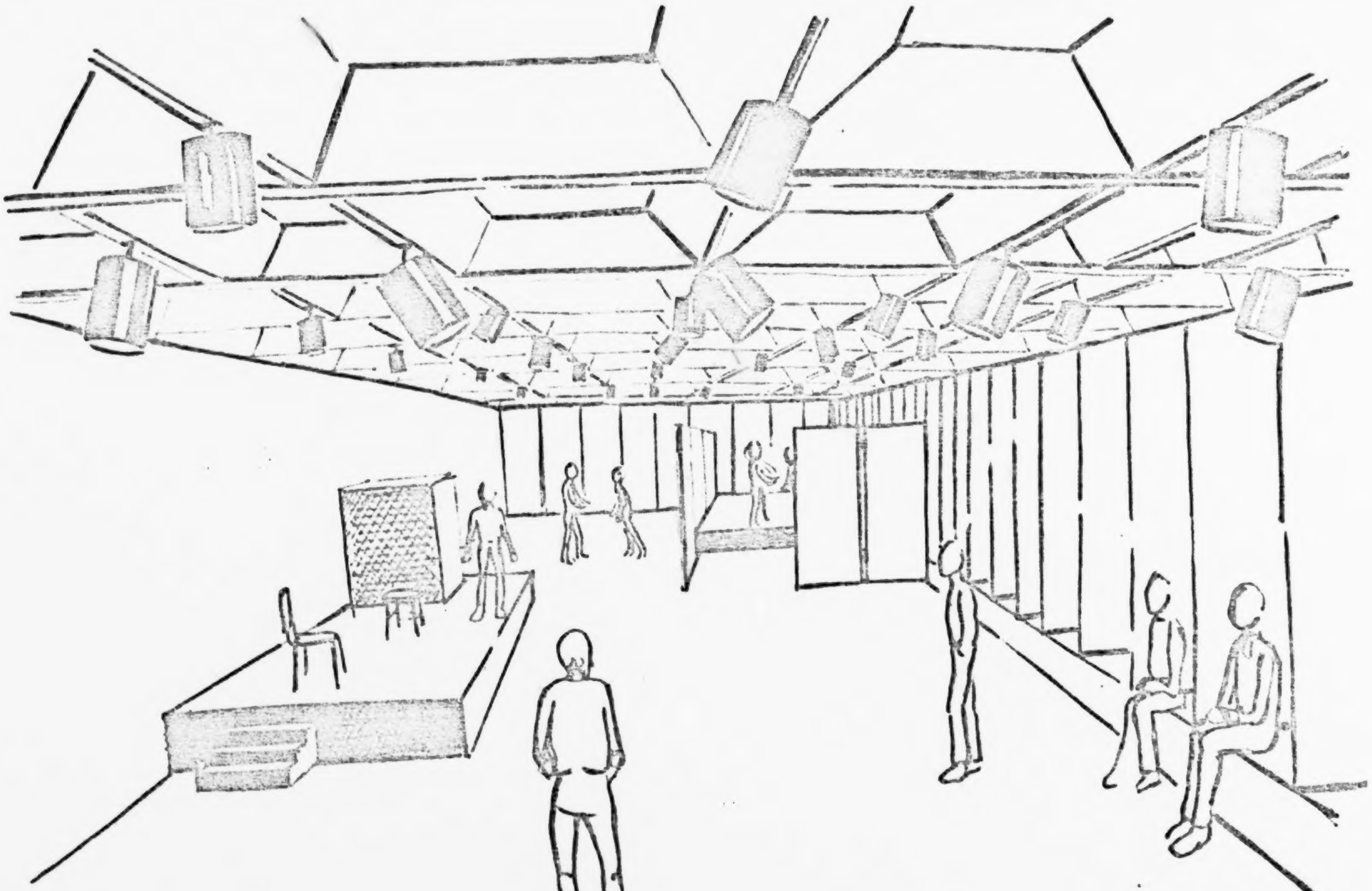


- Heating and Ventilation

Care should be taken in the design of the system of air changing, heating and air-conditioning in order to allow areas to be partitioned off completely without interferring with air circulation.

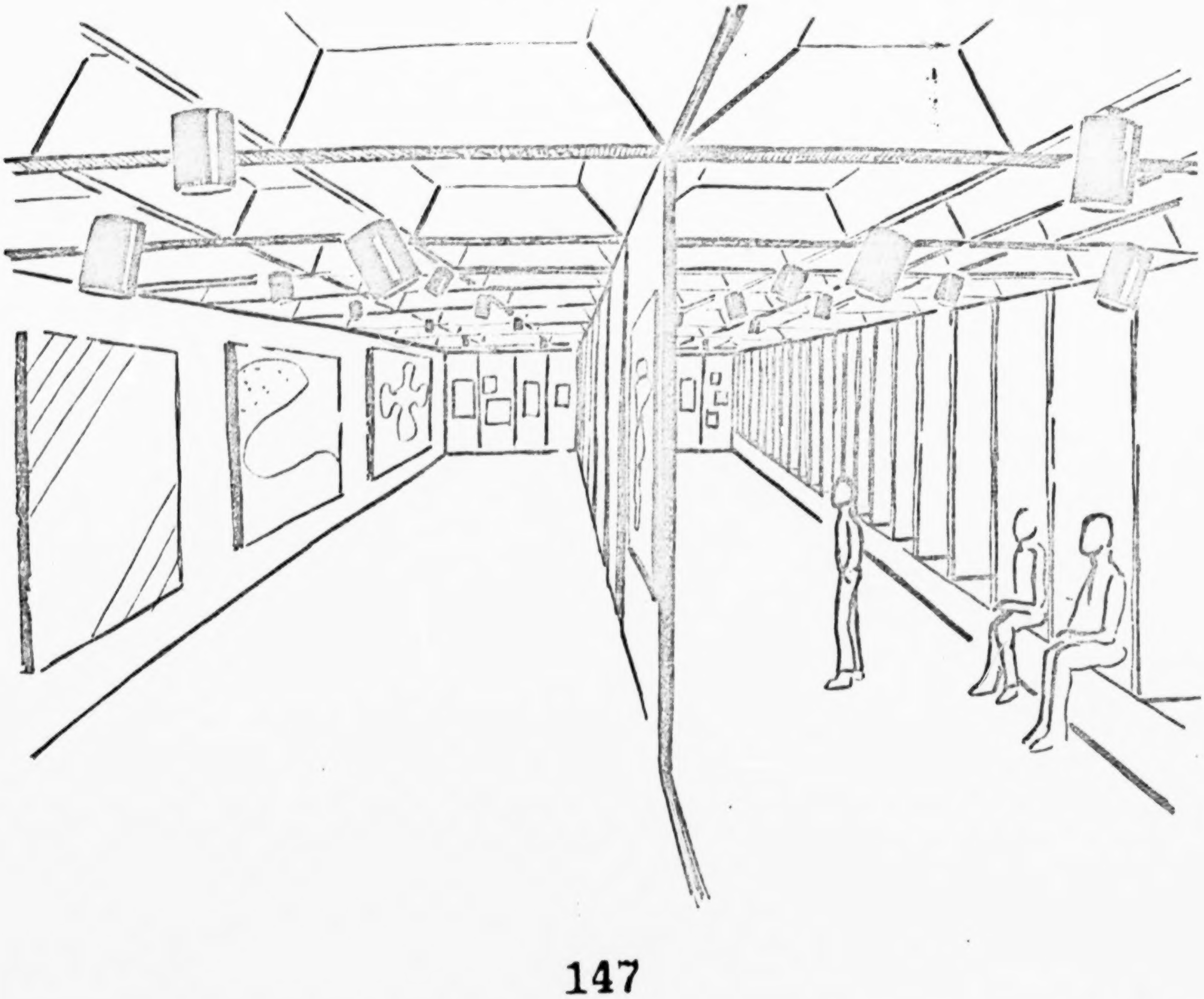
- Furnishings and Equipment

A large amount of the furniture such as casework and horizontal work surfaces should be portable and easily arranged in different combinations. Bulk storage facilities should be adjacent to the studio area in separate rooms so that different groups can isolate their projects.



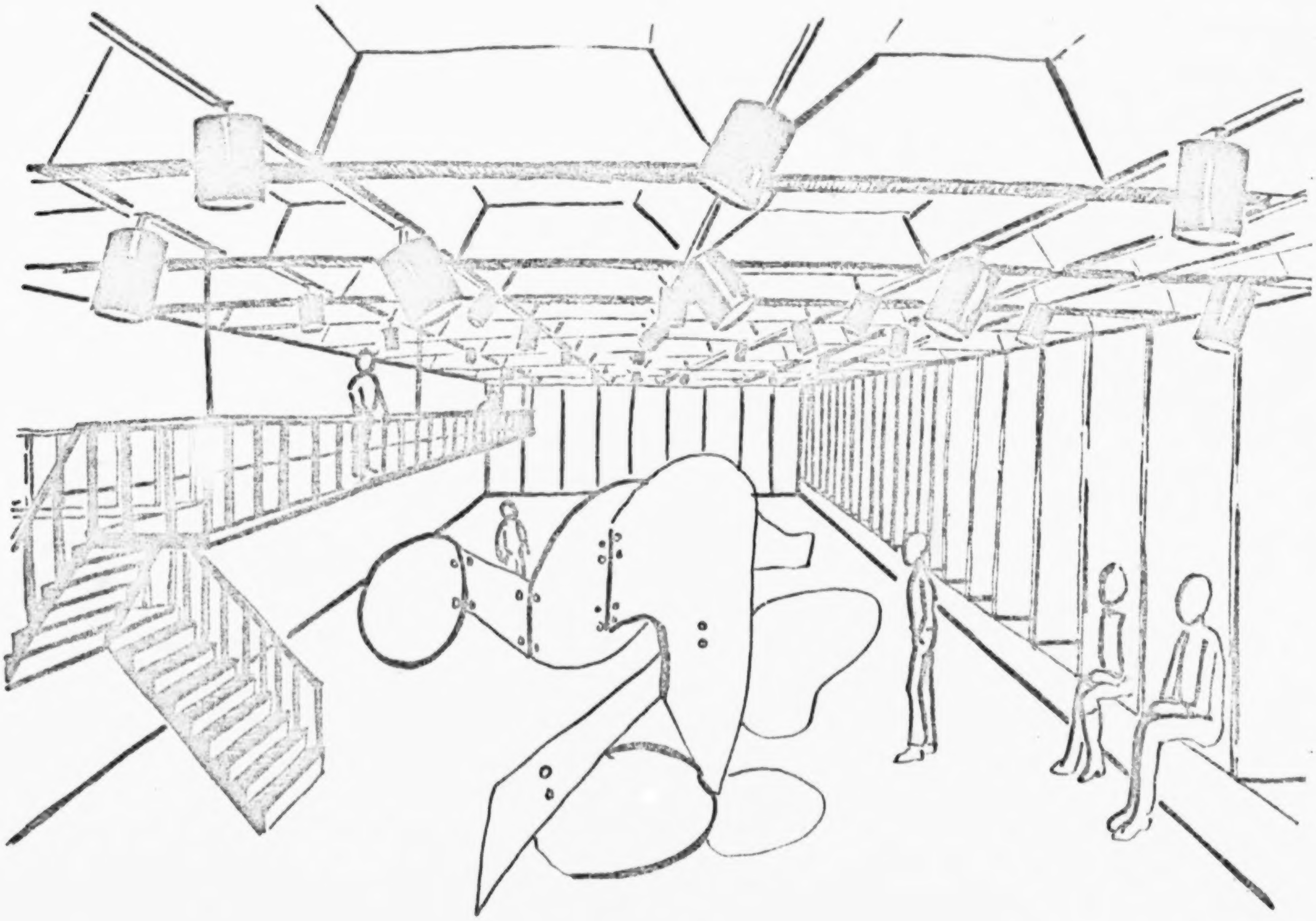
- Acoustics

A large studio should be responsive to sound. Hard surfacing on the floor (tile or vinyl asbestos tile) and a rough texture to the walls will create an "alive" space acoustically. This should be dampened by an acoustical ceiling and perhaps some sound absorptive material on some of the demountable partitions. However, the space should accommodate a higher level of activity noise than a library for instance and the acoustical control need not be too stringent.



- Dimensions

When talking of studio space one must consider volume as well as square feet. The ceiling must be high enough for a variety of activities. If one were to calculate the amount of space needed it should be done on the assumption that each student should have between 50 and 75 square feet. This approximate figure will be made more specific as each is defined in the Center descriptions.



Workshops

Workshops are distinguished from studios by their "level of technology" and their relationship to community resources. In places where heavy or technical machinery is being used, there will probably be a need for frequent updating as well as maintenance. It is advantageous to locate such facilities adjacent to or within an operating business facility. In this way the public school students will be trained by experienced men and will always be able to equate their progress to the real world process. In the case of crafts such as pottery or jewelry making. these facilities should be combined with a commercial interest in order to provide a marketplace for the more creative products produced.

A description of the activities to be housed in workshops is described in Section 3.2.4.4. It includes crafts such as metal work or pottery making, painting, carpentry. industrial design and development, automobile mechanics, etc. These are varied activities but the requirements for each of them can be generalized.

- Arrangement, Equipment, and Furnishings

  The environmental arrangement for these facilities will be designed according to the specifications agreed upon by the parties involved. Whenever possible the space will be leased from operating businesses and used as an educational adjunct or demonstration center. There will be a design and lounge area isolated acoustically from machines, where students and adults will go for discussion and training. The floor surfacing and wall construction should accommodate frequent changes and reorganization. Storage should occur through portable units and demountable partitions. Areas should be maintained for display.

- Lighting and Electricity

  Natural lighting should be indirect and even. Flourescent lighting should provide adequate foot candles on the work surface without daylight.

  Electrical supply must be adequate for heavy machinery.

- Acoustics

  Acoustics should be treated carefully; absorptive materials in the noisy rooms and adequate separation between the noisy and the quieter rooms should be provided.

- Dimensions

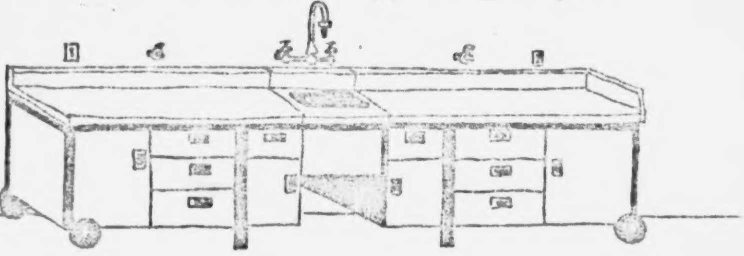
  A range of 100 to 250 square feet per student should be considered in the machine areas and between 25 and 30 square feet per student in the adjacent seminar and training areas.

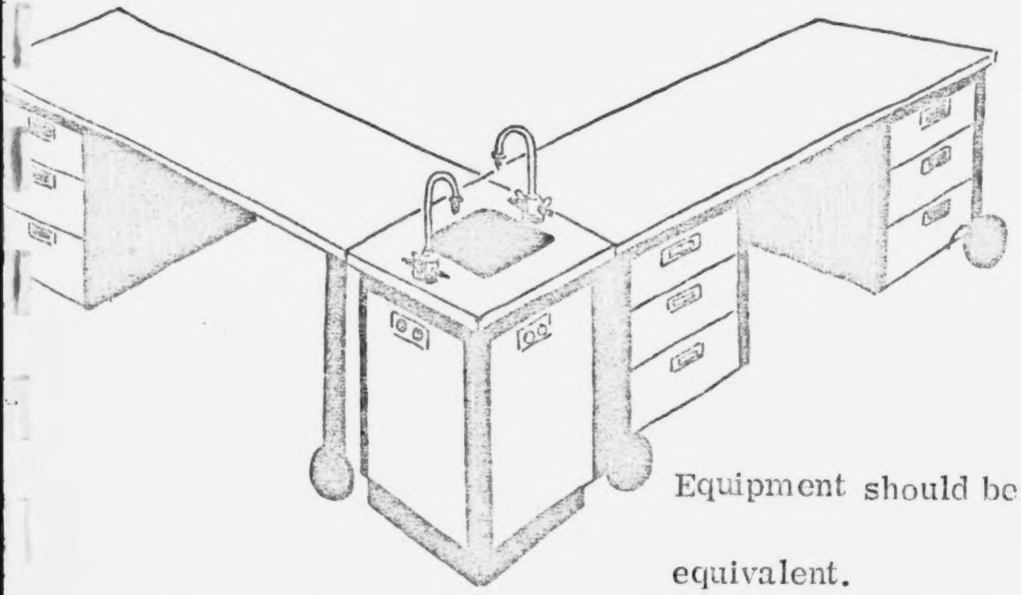
Laboratories

With technology and the study of science changing so quickly, flexibility must be maintained in what has been traditionally thought of as a fixed laboratory with fixed equipment.

- Arrangement, Furnishings, and Equipment

The equipment of a laboratory facility will be movable and interchangeable with the emphasis on individual work areas and preparation space. Equipment and materials storage should be easily accessible to the general work areas. Laboratory tables should be able to be rearranged to produce different configurations for different size and type of groups.





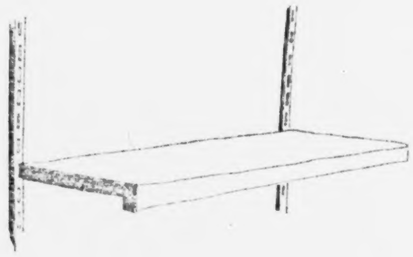
Equipment should be portable, using the "Innovator line" or equivalent.

- Services

Services to the general laboratory areas such as gas, water, acid waste lines, electricity, etc. will be brought to a utility chase or horizontal utility trough with connections to allow portable units to be plugged in. Through this method of supply, laboratories can be adapted for different uses as the need arises—a chemistry laboratory, a food preparation laboratory, an electronics laboratory, etc.

- Partitions

  Partitions, permanent and flexible, must be built to receive shelving, storage cabinets, and wall hung experiments efficiently and without fabrication problems.



- Lighting

  Lighting should be even and adequate for horizontal work surfaces, avoiding large horizontal bands of natural light which produce glare.

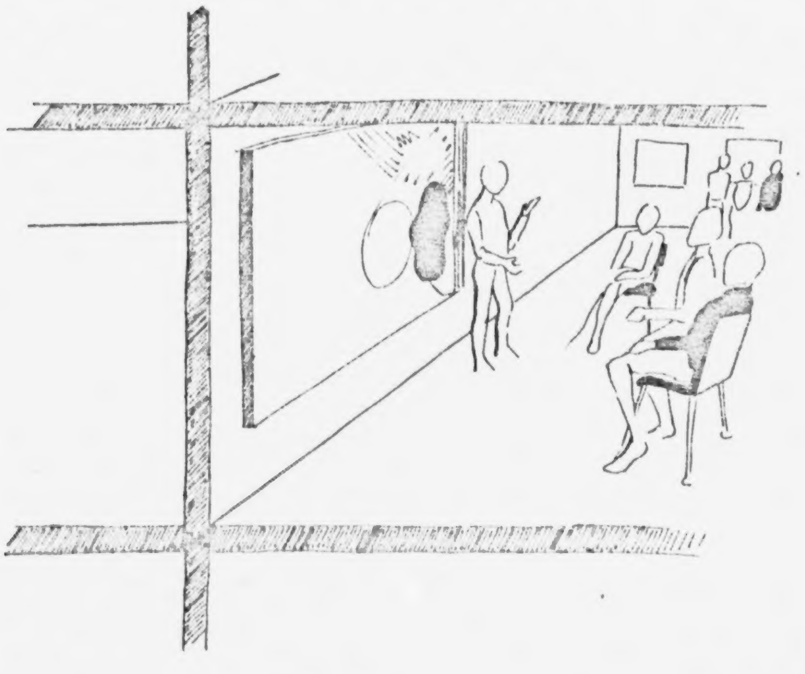
- Dimensions

  In order to allow flexibility for setting up project areas, a labotory must have 45-50 square feet of floor area per student. This does not include bulk storage space or teacher preparation space. Each teacher should have approximately 200 square feet with a comparable amount of storage space.

4.3.2 Partitioning Systems

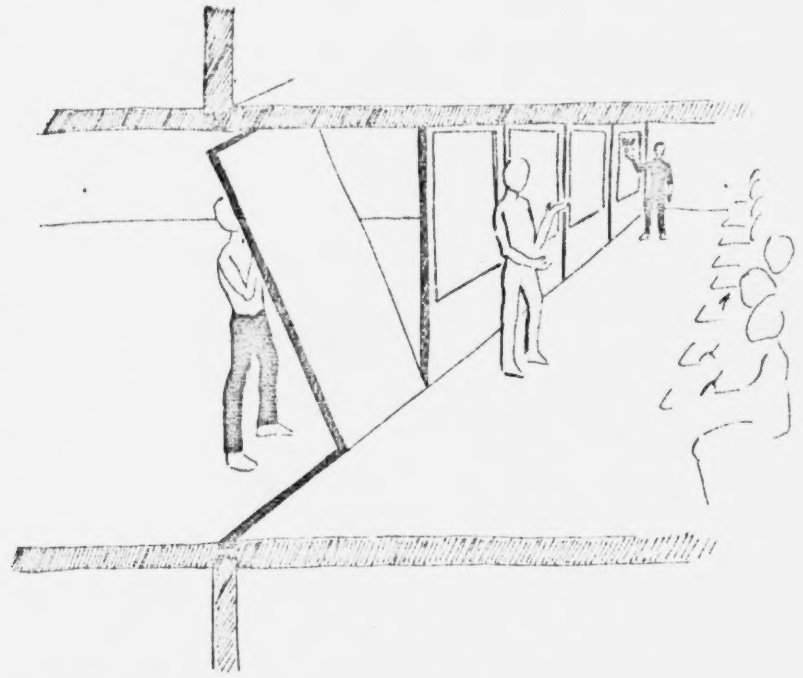
4.3.2.1 Permanent Walls

Permanent walls are called for when a bearing wall is needed which can be achieved in no other way, or when a wall of peculiar form or content is desired. An example of the latter is a wall with molded seating and work space built in or a wall built to climb on (perhaps as an alternative to climbing the stairs to another floor). Another reason for a permanent wall is to accommodate service conduits which must move vertically. There is some degree of security associated with permanent walls. If there are no changeable walls or flexible fixtures, an overwhelming sense of powerlessness to affect their environment is felt by students and staff. At the other extreme, if there are no fixed walls and equipment, the number of decisions left to the students and staff would bring them greater responsibility than would be comfortable. Some pre-established boundaries and "givens" are needed in any facility in order to provide basic security for its inhabitants.



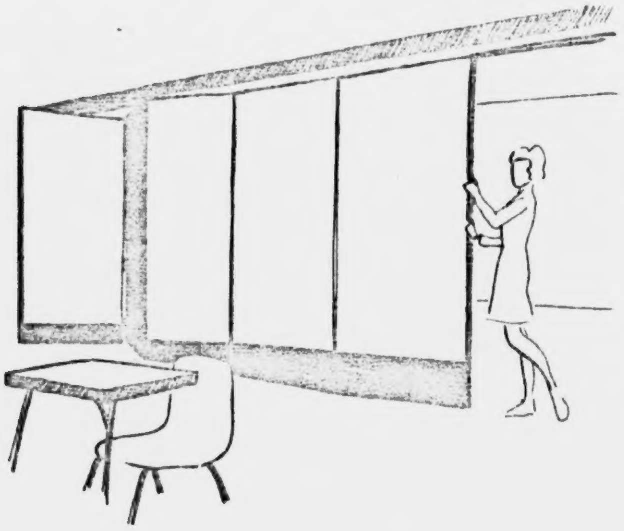
4.3.2.2 Demountable Floor to Ceiling Walls

Semi-permanent walls, whose locations can be changed over the weekend, are desirable when dividing open spaces into separate areas requiring a high level of acoustic and visual separation. Activities which may not be a permanent part of the educational program, or whose location is subject to frequent change but which do require such separation,are likely targets for using demountable floor to ceiling wall panels.



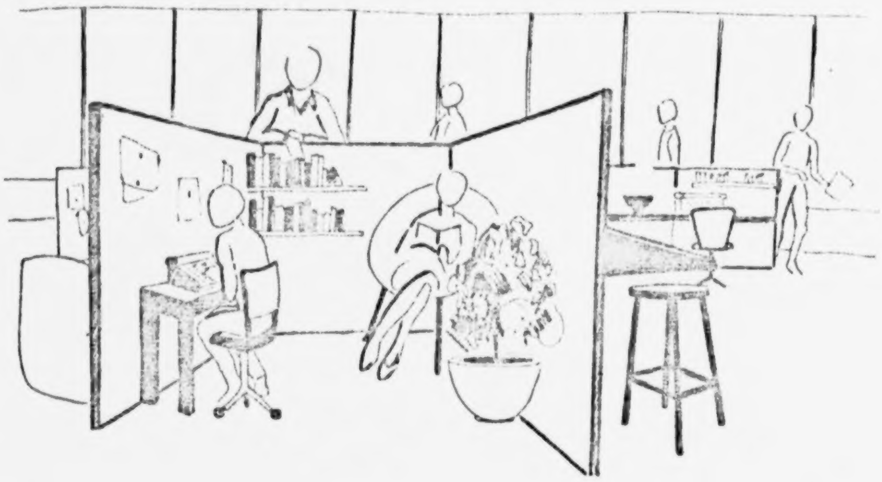
Folding Walls

When the educational program calls for a space that can be used for several isolated small group activities part of the day but which can be used for bringing these small groups together later in the day, a folding wall or operable wall is often useful. The operable wall can provide very high levels of acoustical and visual separation at a moment's notice. The folded wall is simply pulled out of its storage position along a track until it unfolds into a wall which latches to a post or wall fitting on the opposite side of the space being divided. The advantage of such a wall over a floor to ceiling wall is the speed with which it can be put into use. The disadvantage is that it can be used only in that area into which it was built. A floor to ceiling partition can be removed or relocated in an hour or less.



4.3.2.4 Screening Walls

In an educational program where open space is vital because of the need for diversity in individual activity, low screening walls are used to define areas for particular uses and to lower distractions from surrounding activities without severing interpersonal relationships. A student working by himself behind such a screen is still visible to a student or teacher nearby who may wish to inquire about the work being done. Screens can be arranged in infinite ways to construct office spaces, study carrels, displays, and discussion areas. The screen can be of varying heights and widths. Some are so light weight that they can be moved by a single student in a moment; others are more complicated and heavy, making change less easy but providing more security through a sense of permanence. The heavier screens are usually compatible with bracket systems for shelf or desk inserts and are available in a variety of useful and decorative surfaces, e.g., burlap bulletin boards, chalk boards, and enameled metal surfaces on which magnets can be used. Some manufacturers allow the purchaser to specify how he wants the screen to be covered. The heavier screens are not immovable; a large number can be entirely rearranged in an afternoon.



4.3.3 Position of Posture

4.3.3.1 Rationale

In a traditional American school a student sits erect for 50 minutes listening to a teacher, then walks to another room, sits erect in a rigid chair for another period, and, except for physical education, this walking-sitting erect pattern goes unbroken throughout each school day. Even the breaks, like lunch or study hall, are meant to be taken sitting rather stiffly. The fact that one rarely sees such perfect form from our students is a tribute to the restless spirit of the adolescent student. In study halls and lunches, there is a tacit understanding that, within the confines of a chair and a table, any posture will be acceptable. However the understanding is only granted grudgingly. The designers of educational programs have conspired with the designers of educational facilities and furnishings to make any deviation from perfect sitting posture an uncomfortable, even if temporarily relieving, experience. Current educational theory asserts that a wide range of approaches may reinforce the learning of the same concepts. A wide range of educational approaches implies a wide range of learning activities—wider, for instance, than sitting at a desk listening to a teacher or reading. A wide range of activities implies a wide range of postures, and it is in order to make these many postures both possible and comfortable that positions of posture are included here as a part of the facility performance requirements.

4.3.3.2 Four Posture Positions

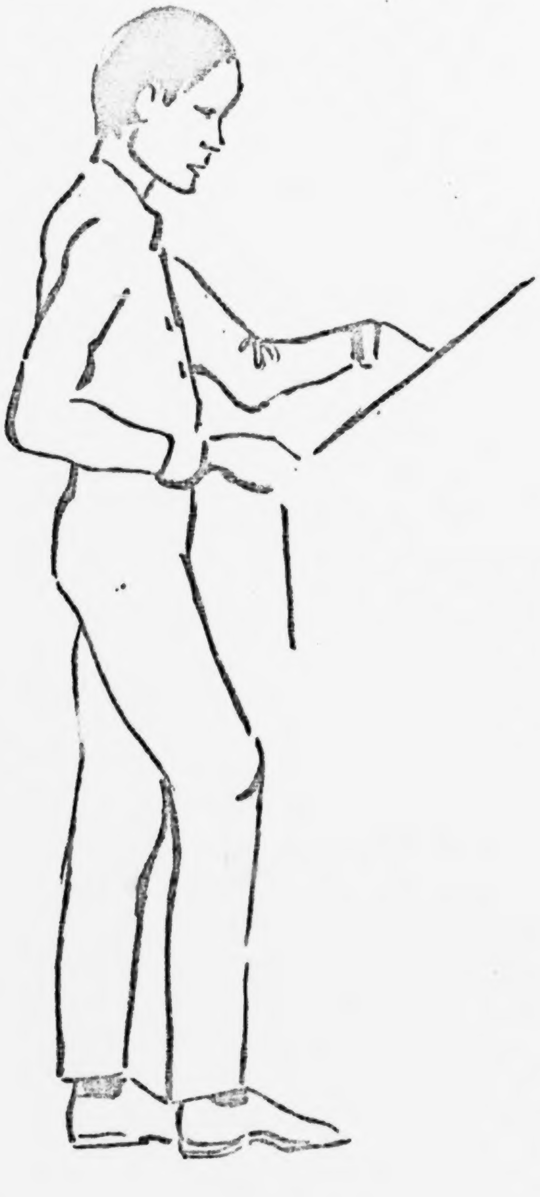
In creating facility performance requirements which pay proper attention to postures, it is useful to describe four groups of postures:

- Standing (walking, talking, reading, working at a counter, etc.)
- Sitting erect (listening, reading, writing, talking)
- Sitting in a relaxed manner
- Floor oriented posture (kneeling, stretched out, cross-legged)

The conditions which would make each of these positions comfortable will be described here, and in the remainder of the facility requirements these conditions will be referred to by symbol in discussing specific facilities.

4.3.3.3 Standing

In order to work in a standing position a work surface is needed that is higher than most tables and desks. The work surface might be only a rail to lean a book on if the work is reading, but it might be a high drafting table if graphics or drawing are the task. Whatever tasks a student might wish to perform in a standing position, he will want support either for the objects with which he is working or for his own body.



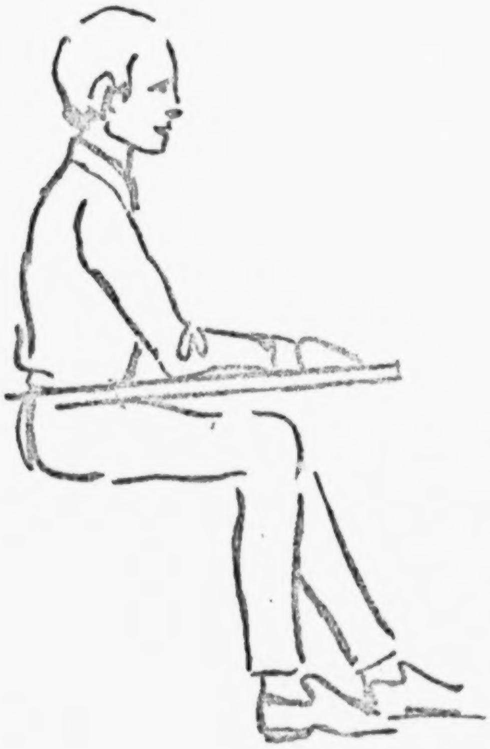
High stools can be used at such work for relief. Support is important,but a good solution for support can be negated by neglecting to notice the change in lighting requirements. The work surface is closer to the lighting source when one is standing and both the angles of light which become disturbing and the intensity of light needed are different than those angles and intensities considered for traditional seating. The closer the work surface is to the lighting source,the larger the shadow area created by any interruptions of light, and the more intense is the light when there is no interruption. There are many ways to compensate for these facts. The choice of method will be dependent on the final design solution by the architect. The following is the beginning of a list of words to stimulate thinking about designing spaces for standing:

- arm-railing
- foot-rail
- counter
- slanting wall
- stool
- shelf
- high table
- ladder
- column, pole

4.3.3.4 Sitting Erect

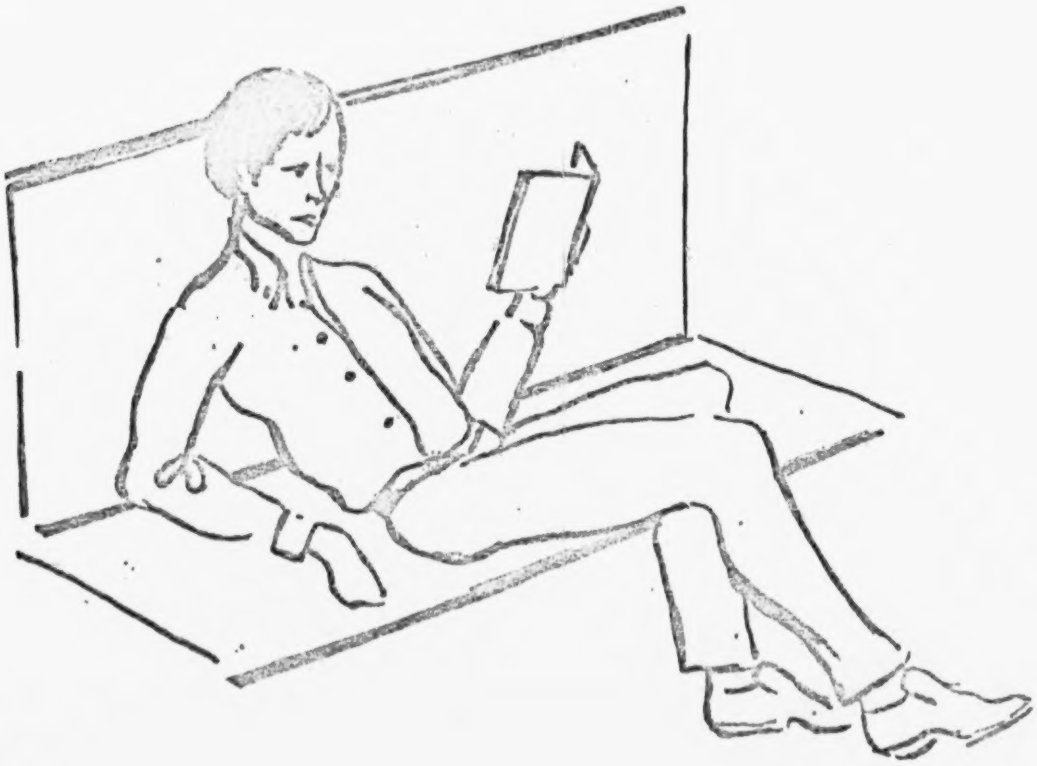
Sitting erect is a posture associated with straight-backed, rigid chairs. It is a posture often used in educational environments for almost all activities but which is recommended here as only one of many alternate postures for engaging in learning activities.

The science of designing space for erect sitting is fairly refined and needs little consideration here. The main point to remember is that from the stand-point of social ease, rigid erect posture seating is found to be uncomfortable in a mix of postures. It is a socially comfortable form only when a surrounding territory is defined by the presence of a desk, tablet surface, or the back of a chair in another row.



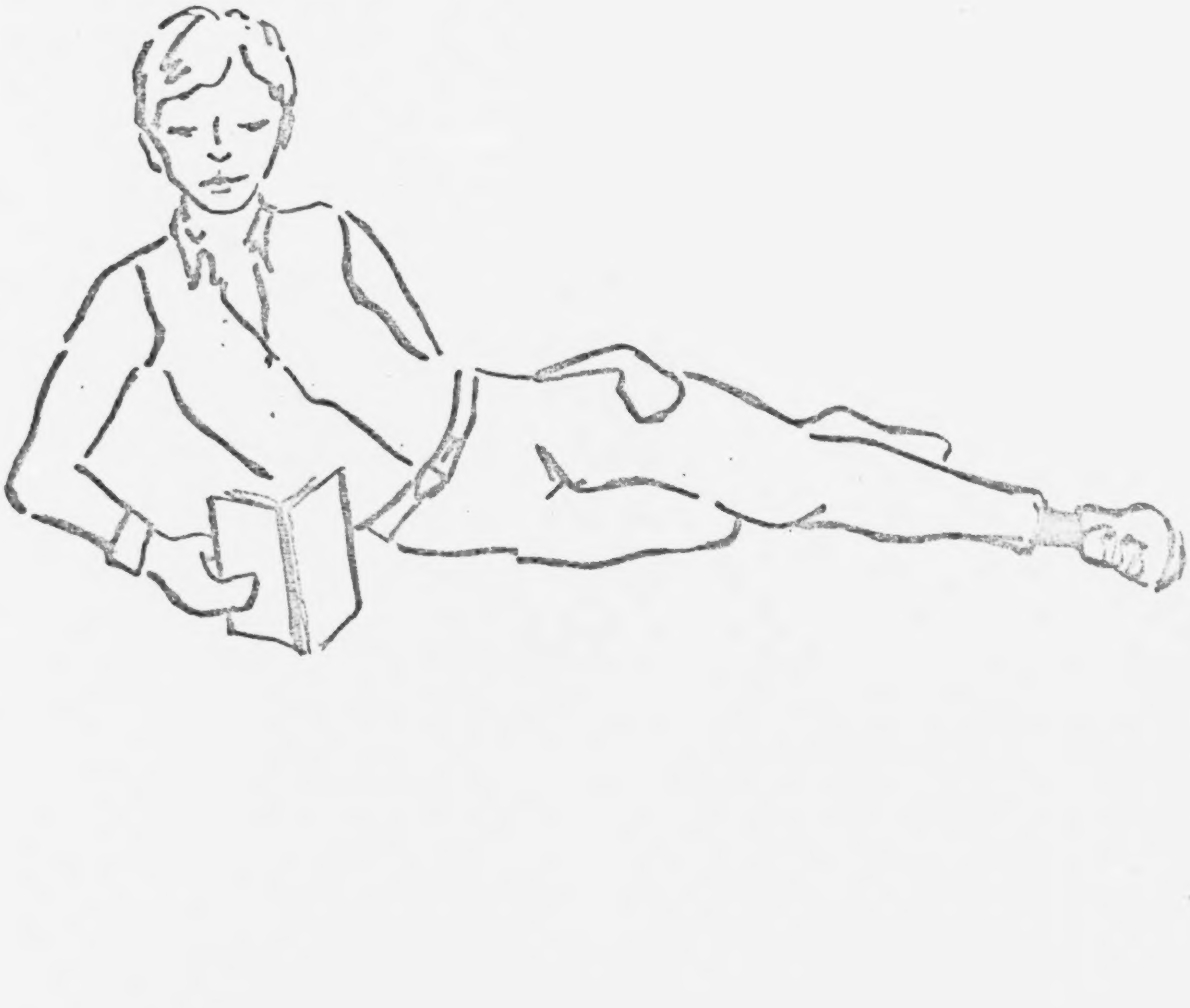
4.3.3.5 Sitting in a Relaxed Manner

The first requisite of relaxed sitting is the permission to sit. The education program for the Fort Lincoln Schools recognizes the need for students to work in the ways most comfortable to them individually. The second requisite is that the physical environment allows and encourages diversity of posture. Boxes, benches, arm chairs, couches, and stools are some of the kinds of furniture which allow a variety of relaxed seating. Not only the furniture but the building which houses it should be designed to provide a variety of relaxed seating. Ledges built around a planter, niches in walls, stairs especially designed for sitting as well as climbing are all ways in which the building can add to the variety of relaxed sitting positions. Sitting on the stairs is really sitting on the floor.



4.3.3.6 Floor Oriented Positions

When the floor is no longer considered as only a base for supporting chairs and desks and feet, it is no longer necessary to think of the floor as something flat. The floor becomes a work surface and its design becomes subject to the same considerations as other aspects of the facility. Even the ceiling must be considered for its ability to denote an area's singular suitability for sitting on the floor rather than sitting in chairs or standing. A lowered ceiling (which might actually be just the effect of a stairwell or other functional volume) can indicate a small gathering place if the lighting is different from lighting in more open places, and if the surface of the floor is inviting i.e. carpeted, heated, "astro-turfed", etc. The floor can be sculptured to create a variety of hard and soft surfaces, high and low places, troughs to dangle one's feet in, slopes to lie on and read, and pits to discuss in. If the floor is properly treated with carpet, foam cushion, or other soft materials such as stuffed canvas, there is not a great deal of need for accessories. However,a good supply of variously shaped washable cushions and hard writing boards will make any floor more flexible and useful.



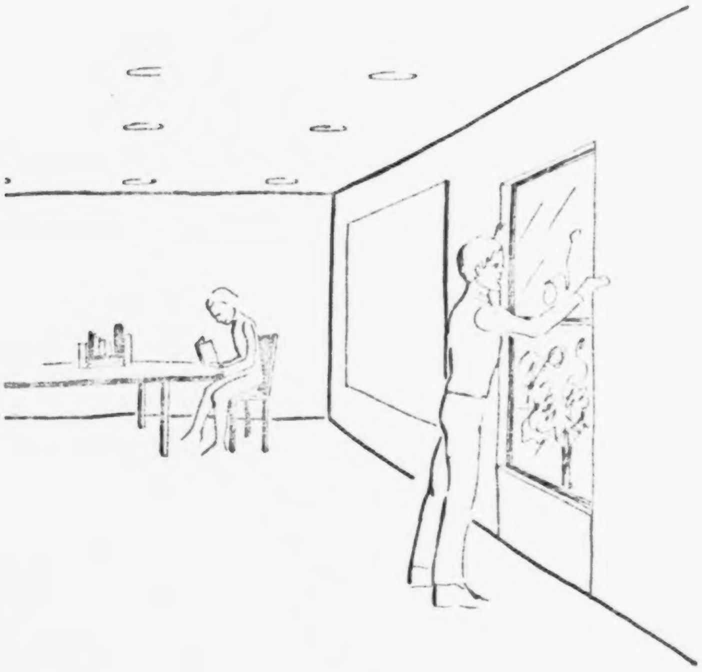
4.3.4 Lighting

Lighting can be used to serve functions more specific than just providing light. Lighting can be used to stimulate moods, to form attention or to distract, and to define areas. In a facility designed to provide diverse and flexible environments, the lighting must be designed using the same criteria. There must be a range of lighting equipment similar to the range of partitioning systems, and for similar reasons.

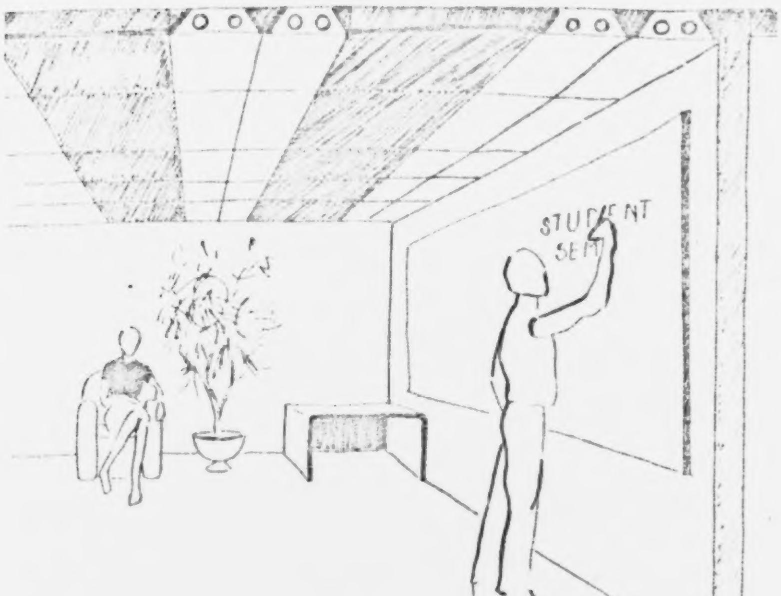
The variables to be considered are as follows:

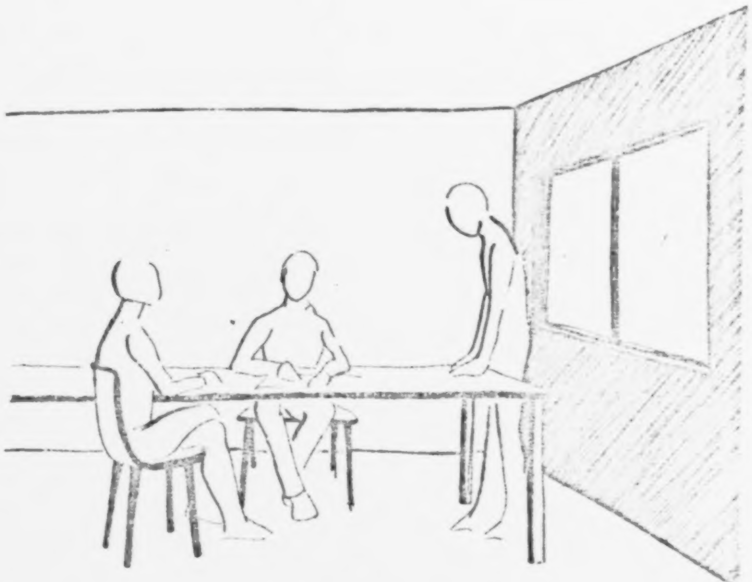
- natural light
- incandescent light
- flourescent light
- direct light
- reflected light
- fixed intensity
- adjustable fixture
- free standing fixture
- adjustable intensity

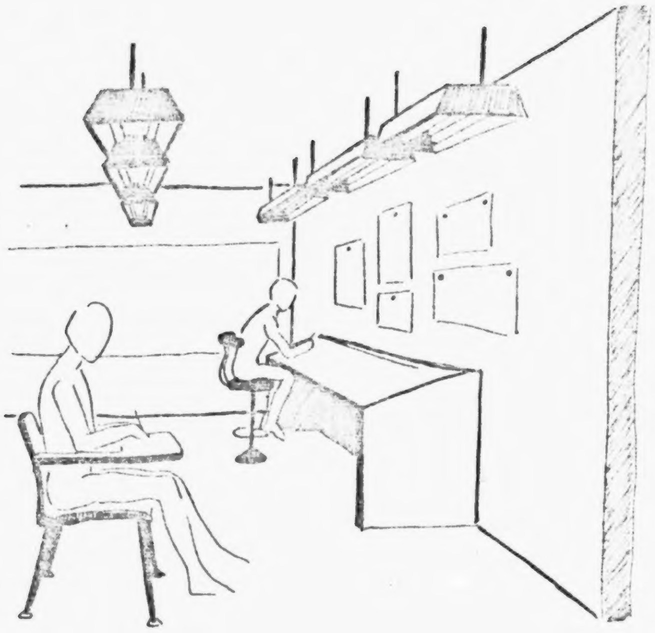
The use of windows is reserved for acquiring a view to the outdoors and is not considered a variable for lighting.

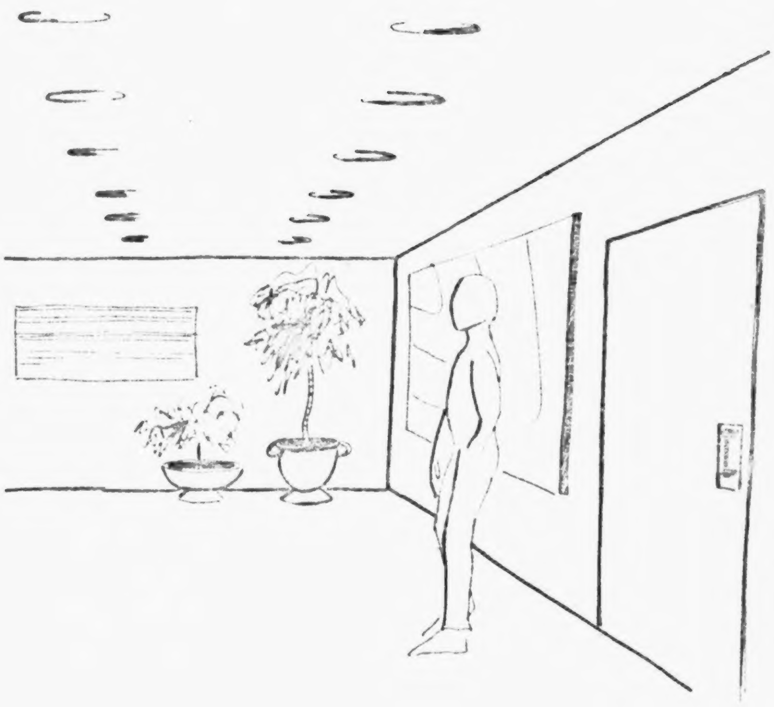


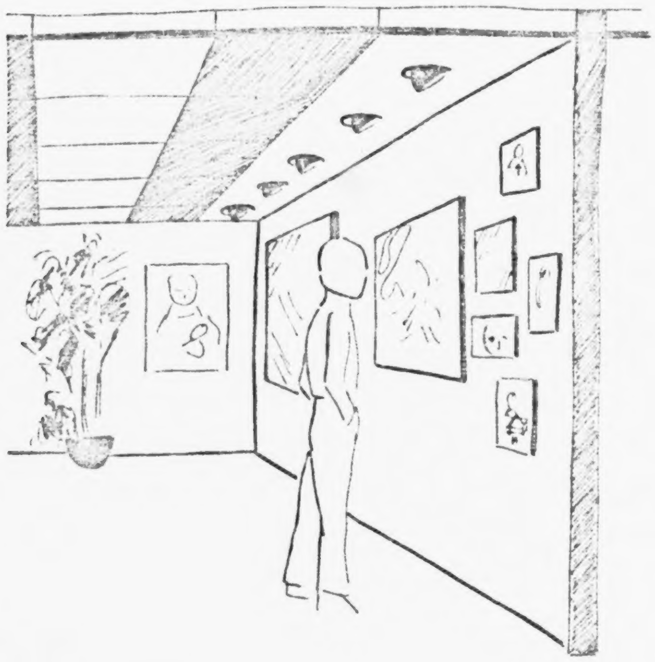
In an open area divided by screen partitions, the light from windows would be cut off soon after entering the building. In other situations, windows are a poor source for lighting because of back lighting and glare effects, and because they give rise to expensive equipment such as curtains and blinds.



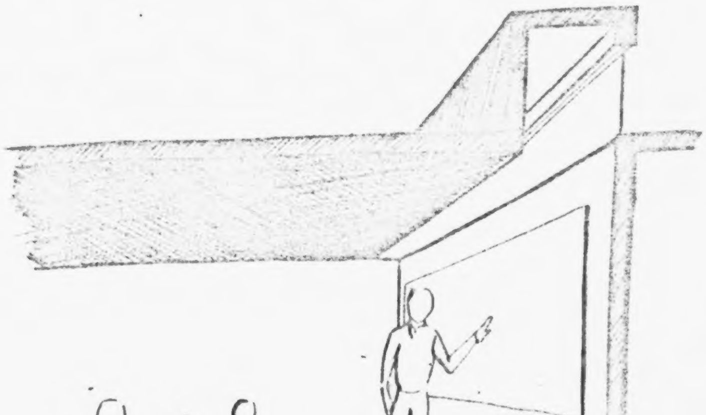






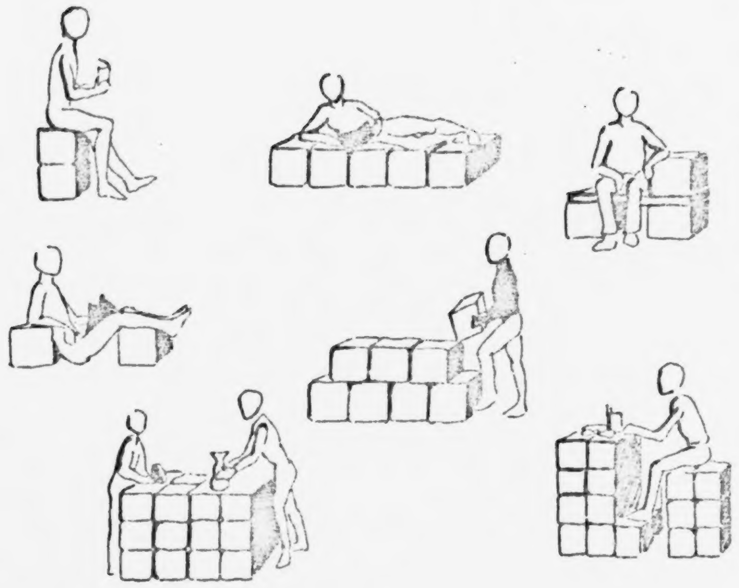


Clerestory windows, light wells, and skylights are ways of getting natural light with fewer visual problems. When windows are used for a view, they should be appropriately designed so as to emphasize that function by creating a frame.

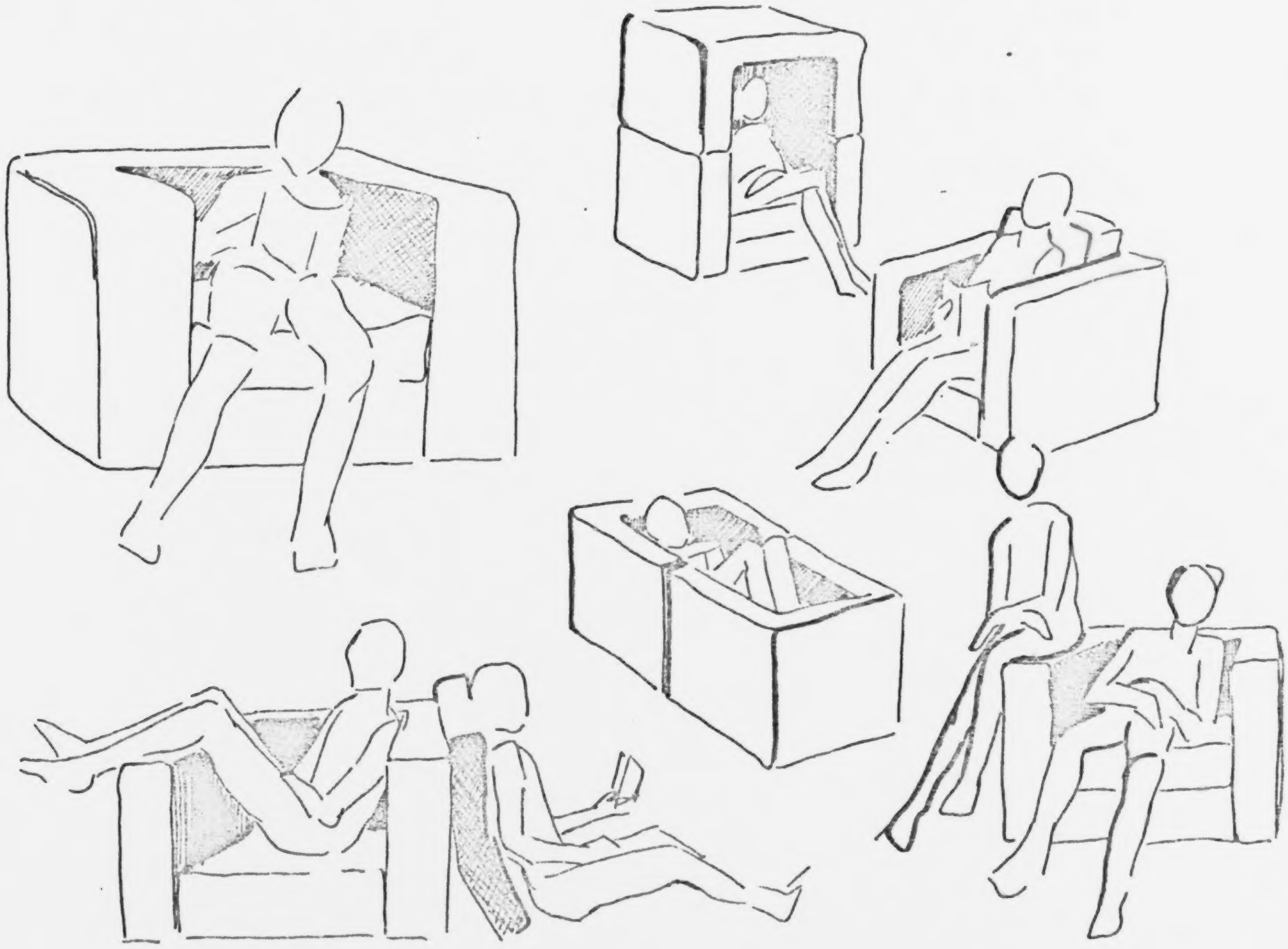


4.3.5 Equipment and Furnishings

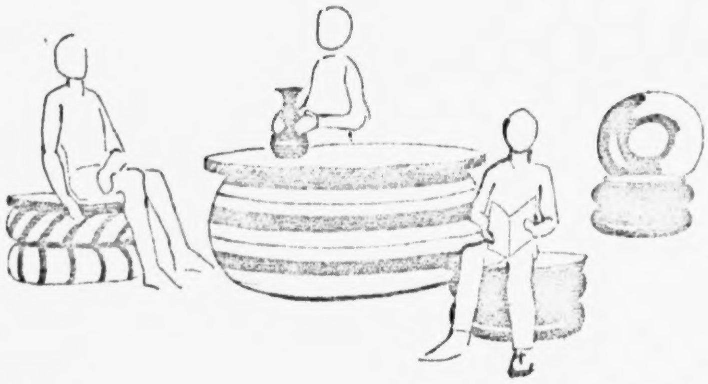
The Fort Lincoln School is dedicated to the idea of developing the ability of people to direct themselves and to make decisions about what they will do and how they will do it, whether they are students, staff, or community. The equipment and furnishings must help them understand and practice self-direction. An individual in this school will frequently ask himself, consciously or unconsciously, what he is doing, why he is doing it, and if he is using the best tools and methods to accomplish it. The more abstract the furnishings and equipment become, the less they direct behavior. An example of furniture that is not abstract or generalized is the straight back chair; a simple cube is an example of an abstract piece of equipment. Compare straight back chairs and tile floor to cubes and carpet. With the chair and tile floor one is essentially told, "sit in this chair, do not sit on the floor, sit up straight." The only real choices are whether to sit facing forward or to ride the chair. A third choice, thought dangerous, is tilting back. Generally, only one of these three is considered "legal." Cubes and carpet are more abstract because there are many ways to use them or interpret them. Cubes and carpet ask the individual, "What are you doing? How would you be comfortable doing it, and can we be helpful in providing that comfort?" He could stretch out; sit up and lean on a cube; use it as a desk, a stool; stack several to make a counter, a two-leveled sitting space; etc. An infinite number of possibilities are presented, and it is up to the inhabitant of such an environment to decide how to use it. The cube is mentioned here only as an example of the concept of abstract equipment, it is not offered as a solution.

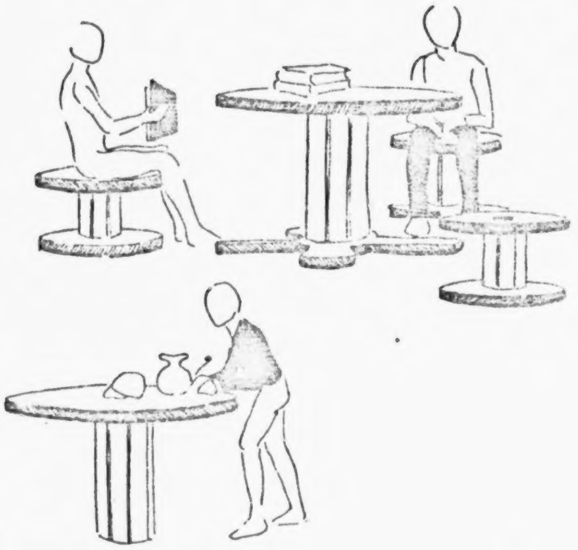


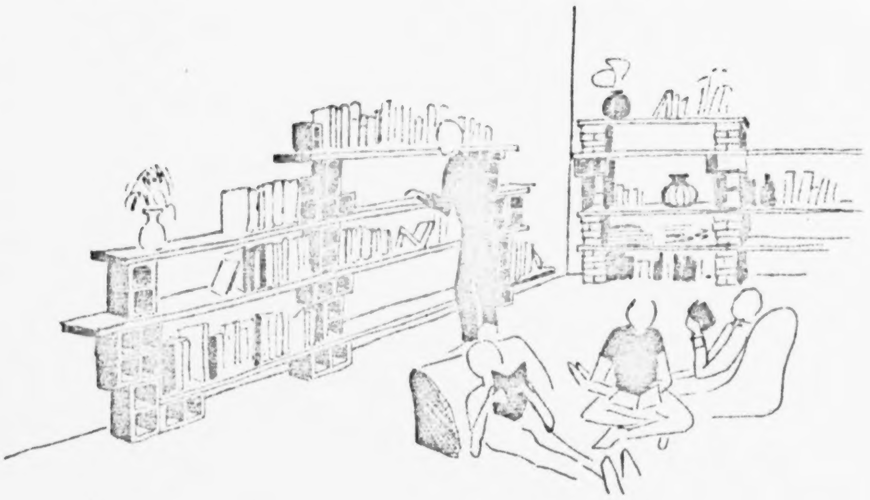
A middle ground between the totally abstract and very rigid is a chair which can be used in several positions.



One possible system to provide an adaptable environment would be supports, containers, and work surfaces that can be assembled in many configurations. The Educators Manufacturing Company manufactures a line of storage equipment which is composed of interchangeable bases, storage units and work surfaces, and this system could provide flexible support for an adaptable environment.

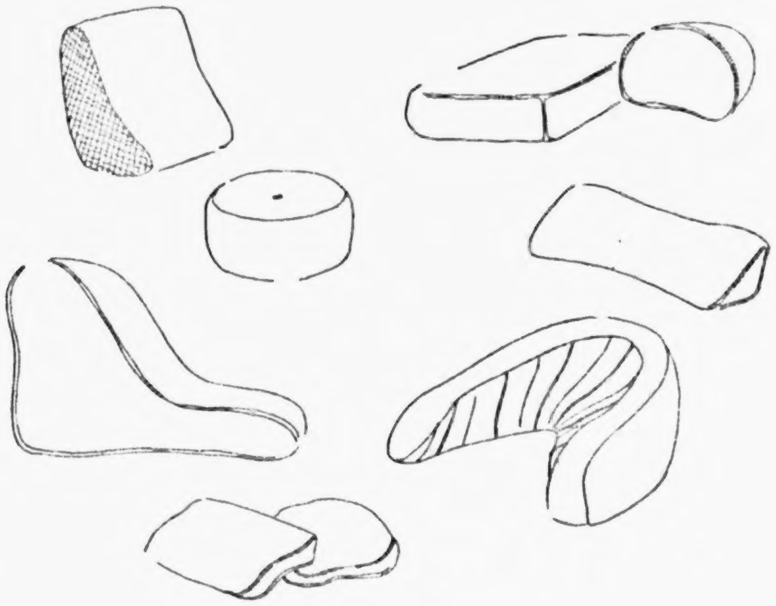




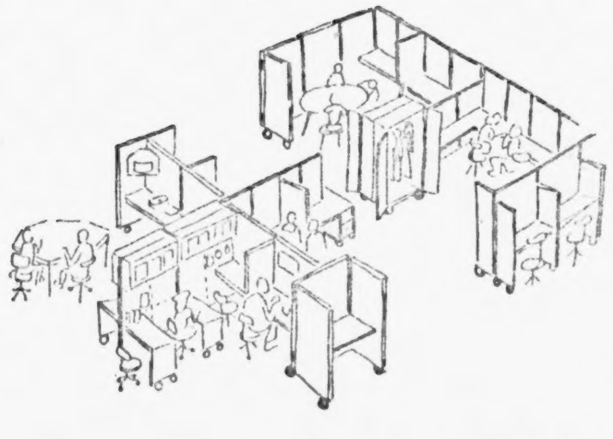


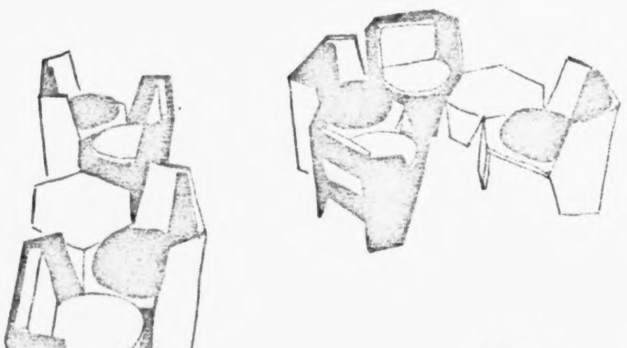
There are currently many less systematic ideas which are good. Crates, cable spools, tractor inner tubes, and bricks are some items now being chosen as supports for work surfaces, table tops, shelves, etc. They are inexpensive, usable in many ways, and in vogue with modern interior design concepts.

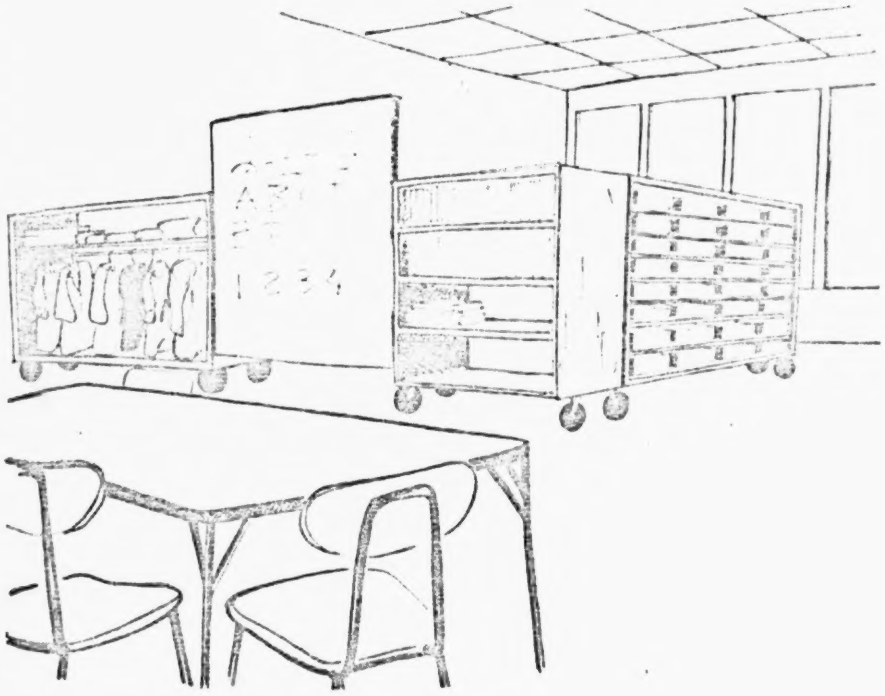
Variously shaped and sized cushions and arm or back rests are good for seating when carpeted floors are provided.

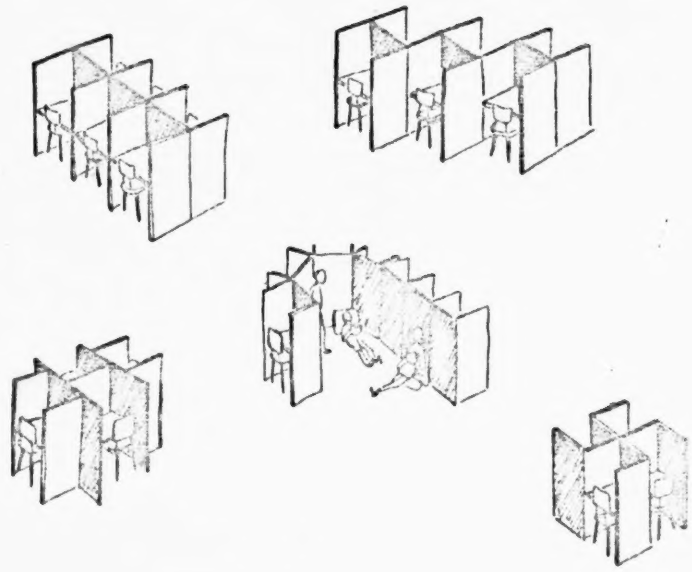


Disposable furniture should also be considered. Cardboard stools that cost about 50 cents are one available item that allows a person to paint his own equipment and keep it. Furniture and equipment which is modularized provide systems which can be arranged in many ways. Domino seating, trapezoidal tables, hexagonal chairs, and flexible carrels are examples.

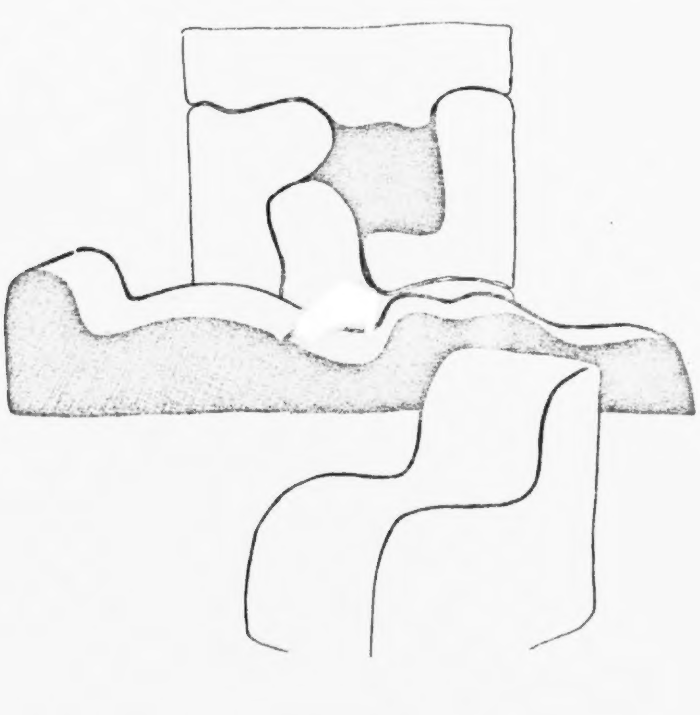




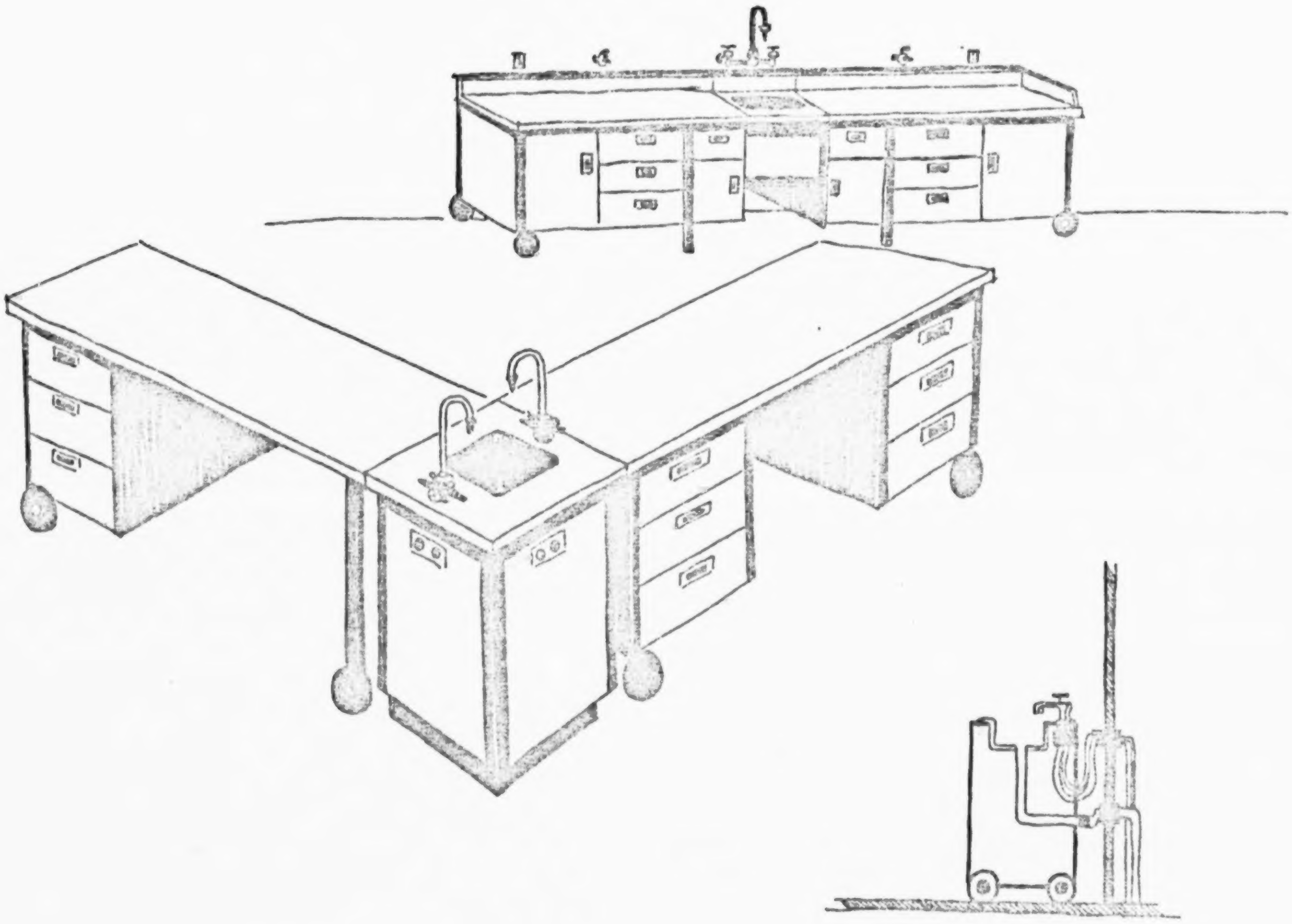




Furniture which can be flexibly functional but easily stored when not in use helps to keep spaces open to rapid change.

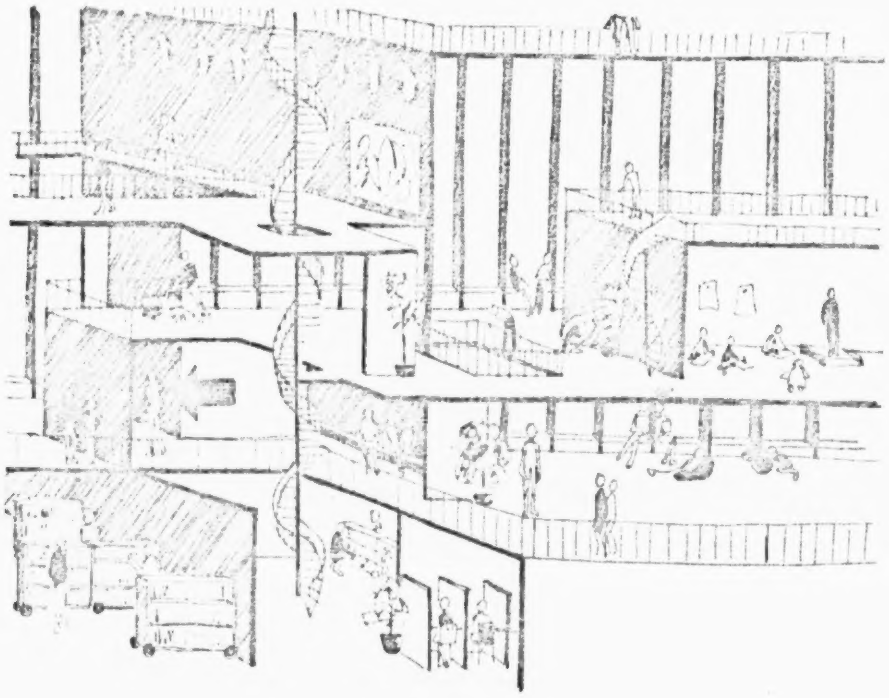


Appliances and utilities should be movable, except in a few permanent locations such as washrooms, kitchens, etc. Portable sinks with hose connections to wall mounted chases, portable electric ranges, refrigerators, laboratory tables, etc., will be used more frequently and with more relevance when they can be used when and where they are needed.

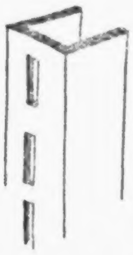


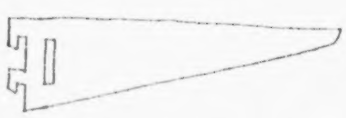
Laboratory equipment and storage units which can be moved from one location to another are now available. Laboratory sinks use hose connections to water and chases in the wall.

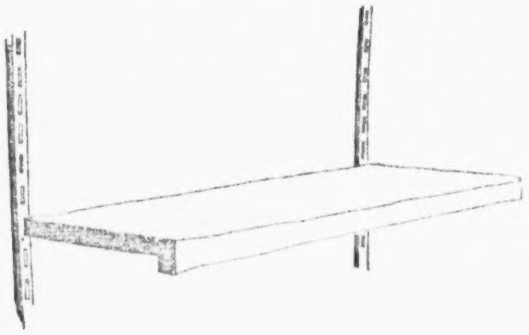
Furniture is only one aspect of environment that must receive direction from its users. The walls, floors and ceilings, the utilities and appliances, and the educational hardware all must be selected after considering what choices they offer the individual who uses them. The implication is that, if equipment and furnishings are chosen which are usable in several ways, the users will learn from practice how to make decisions about their environment.

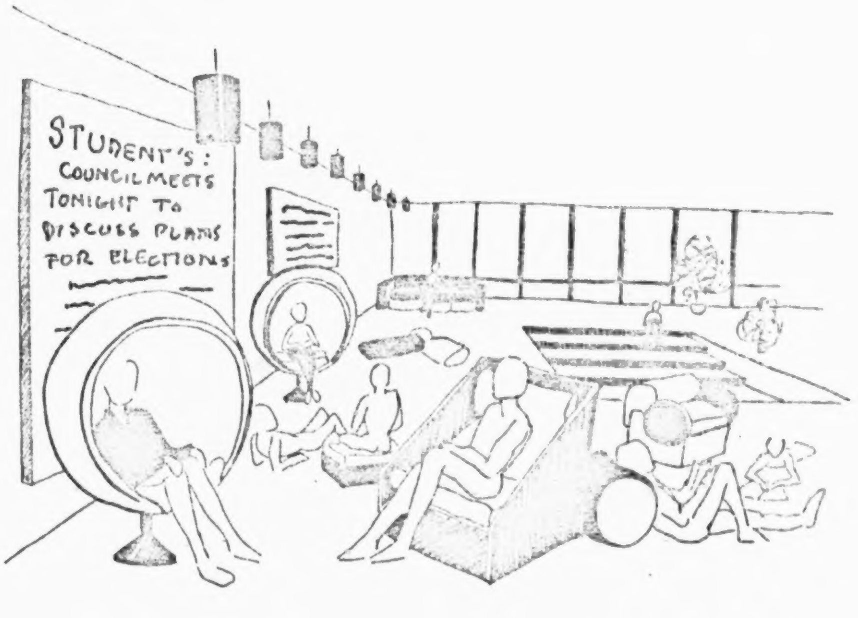


The walls must provide a variety of work surfaces as well as visual stimulation and structural utility. Tension post or bracket systems for mounting shelves, desks, or other suspended devices should be located in many areas.





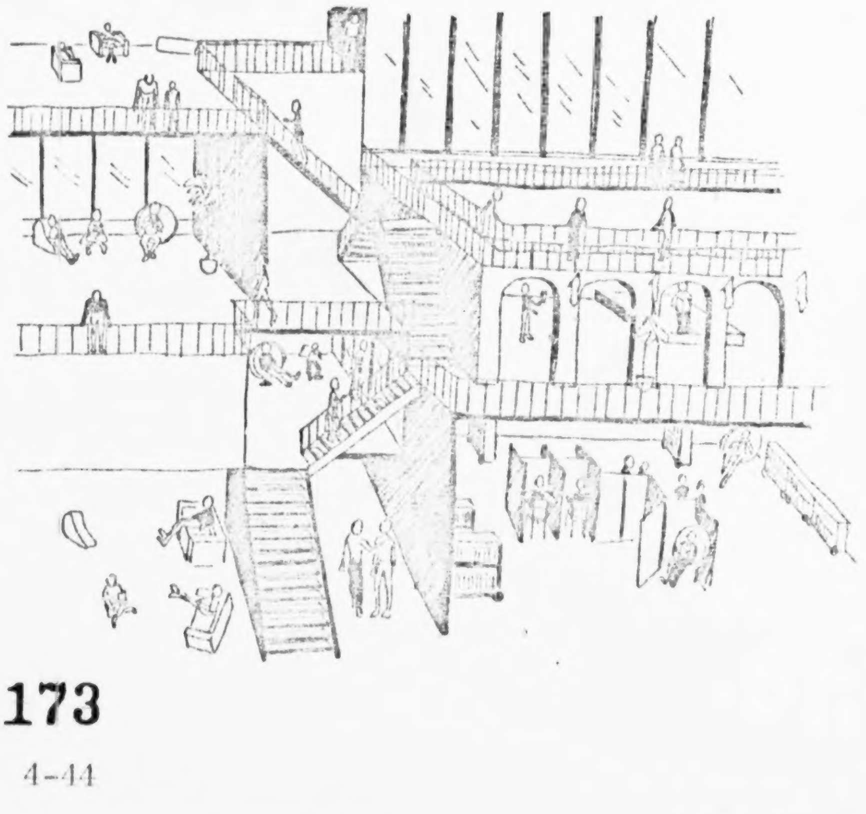




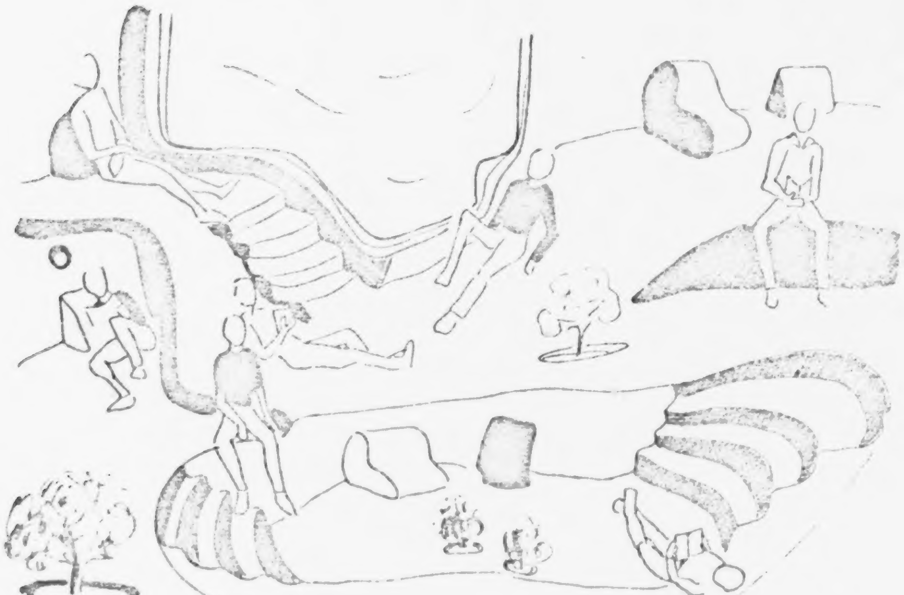
Carpeted walls or other soft surfaces for tack-up space are needed as are surfaces for projection, for writing on with magic marker or chalk, and for using with magnet markers. A product called Faberboard is currently meeting many of these needs.

Many minor pieces of equipment such as pencil sharpeners, coat hooks, markers, trays, etc., can be fixed by magnets to any metal surface (storage cabinets, carrel walls, and Faberboard walls).

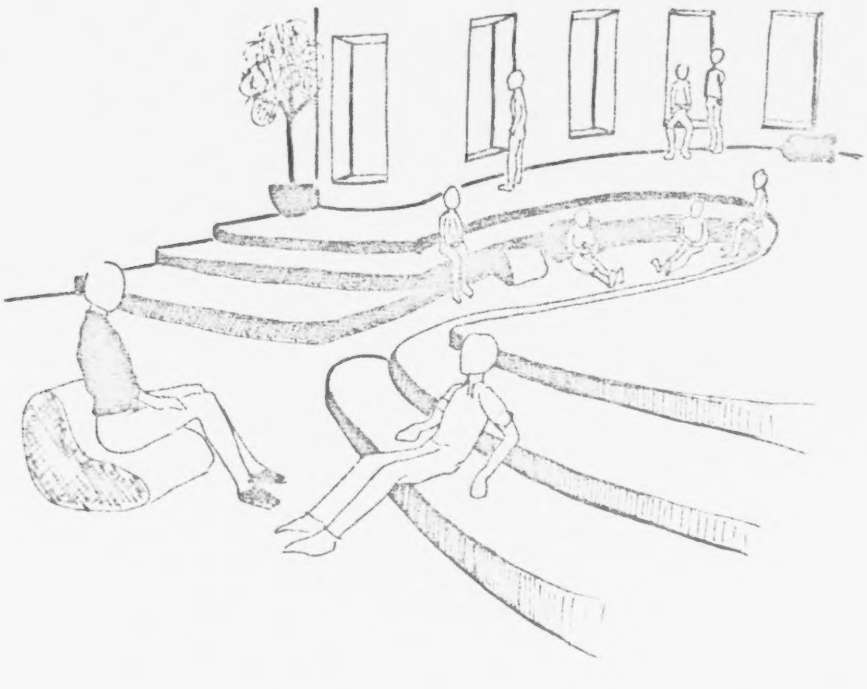
It is sometimes desirable to link internal constructions to the structure of the building. A platform built by students, for instance, could be made rigid by connecting it to the floor or wall. If there are finished surfaces into which materials cannot be nailed or fastened, special connections should be provided.



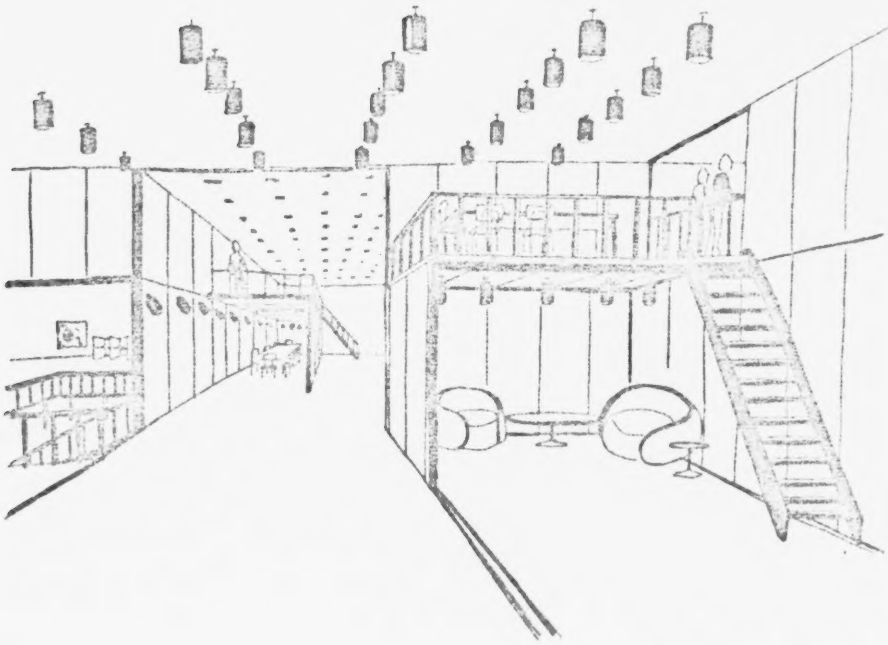
The floors should not be thought of only as flat surfaces. They need to be designed to give variety to the environment. Landscaped floors and walls can provide special spaces for individual study, group gathering, and relaxing and exercise.



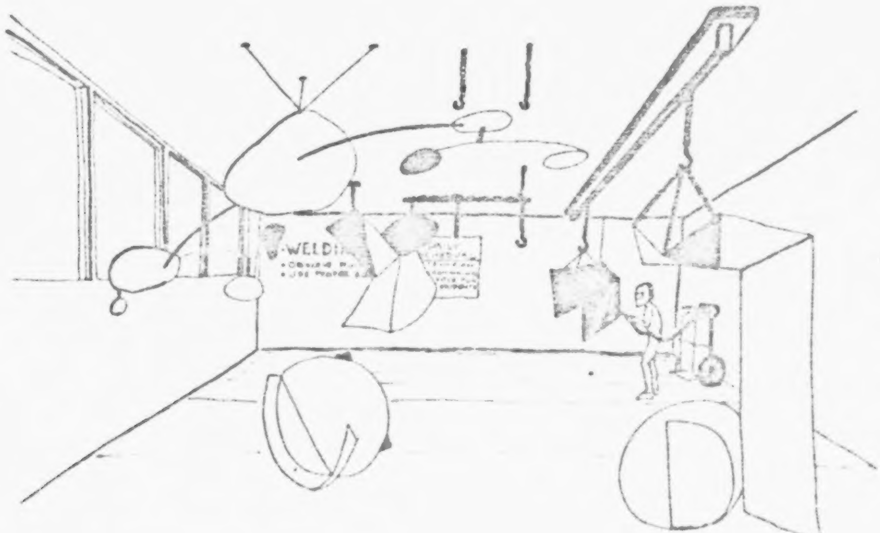
Carpet often makes a floor usable in more ways than does a tile floor, but care should be taken that appropriate places are provided where water or other materials can be used freely without damage to carpet. Electric carpet providing outlets for audiovisual equipment is now available and may be appropriate for some areas.



Some systems for changing the floor or adding other levels ought to be provided. Scaffolds, grid constructions, or hydraulic platforms are possibilities.

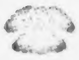


The ceiling should perform functions beyond those usually assigned to it. Students and teachers should be able to hang things from or attach things to the ceiling.

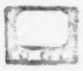


4.3.6 Services and Acoustics

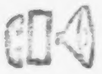
The type of services necessary for each area will depend on the activities going on in the area and the "level of technology" desired. The services are self-explanatory and are listed below with their corresponding symbol.

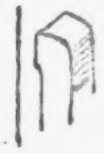
telephone 

clock

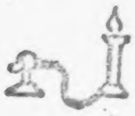
cctv 

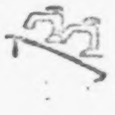
computer terminal

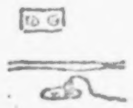
loud speaker/intercom 

vent 

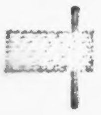
HV Electric HVE high voltage

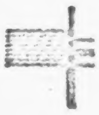
gas 

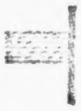
water 

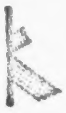
extra electric outlets 

When spaces are designed or identified in existing structures, it is necessary to maintain the required acoustical control both from outside noises and from adjacent spaces. The symbols below indicate the types of acoustical control which are required.

low acoustic control needed 

A medium acoustic control 

high acoustic control 

special acoustic control (recording, etc.) 

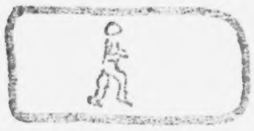
4.4 Performance Requirements Matrices

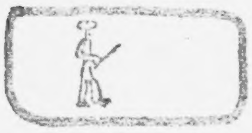
According to the generalized system of performance requirements described in Section 4.3, symbols have been assigned to categories of space, position of posture, partitioning systems, lighting, equipment and furnishings, and services and acoustics. In the following performance matrices, these symbols are referred to in each space category recommended for the Centers.

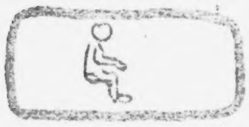
As has been described in Section 3.2, the Center Concept recommends the establishment of relationships between the space categories without necessarily locating these spaces on the same site. For example, in the description of the Engineering and Technology Center, the central computer may not be located anywhere near the Electronics and Physics Demonstration Laboratory, but programmatically they would have a very close relationship.

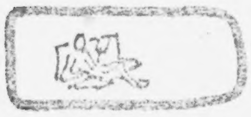
These matrices are not intended to limit thinking about facilities, but rather to point out some important considerations with which the architect will have to deal. The square foot recommendations are general and do not include such support spaces as washrooms or maintenance space requirements.

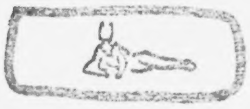
KEY TO PERFORMANCE REQUIREMENTS MATRICES

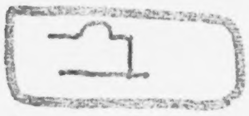

moving

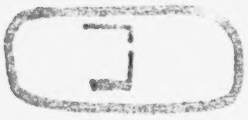

standing

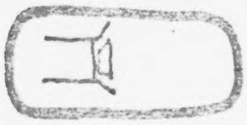

sitting erect

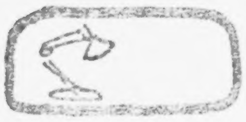

sitting easily

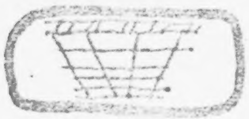

on the floor

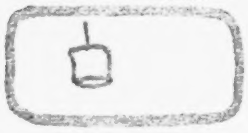

sky light

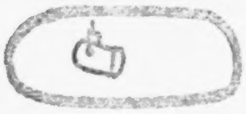

clerestory

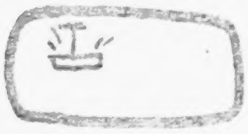

window


luxo lamp

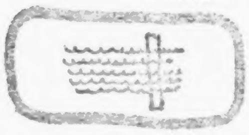

fluroescent

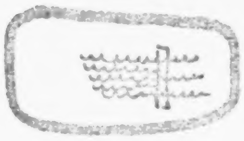

fixed incadescent

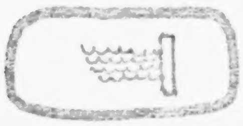

adjustable incadescent


reflected incadescent

blackout capability

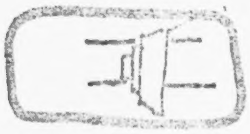

low acoustic control needed


medium acoustic control needed

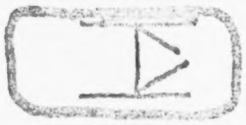

high acoustic control needed

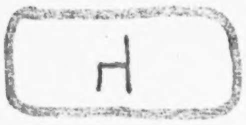
special acoustic control

demountable floor to ceiling walls

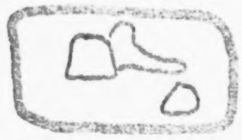

folding walls

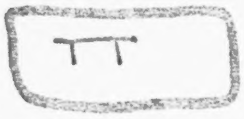
screen/carrel walls


permanent wall


straight back seating

comfort seating


cushions

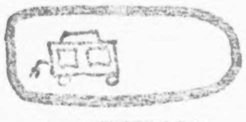

work surface

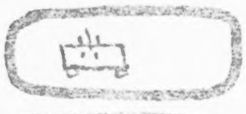
high work

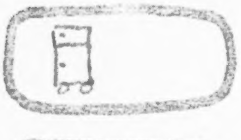
stools

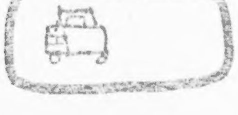
low rolling casework

high barrier rolling casework


rolling oven and range


rolling sinks or lab tables

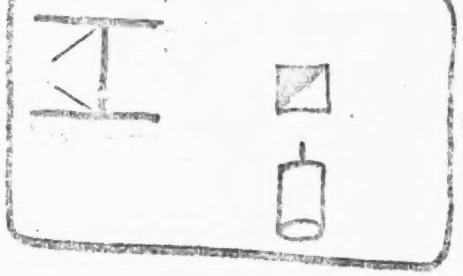
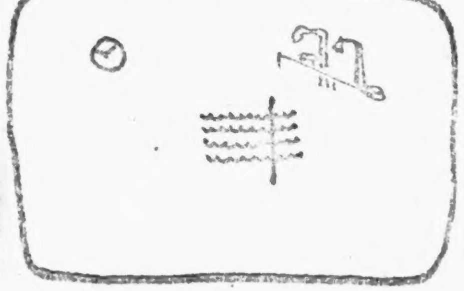
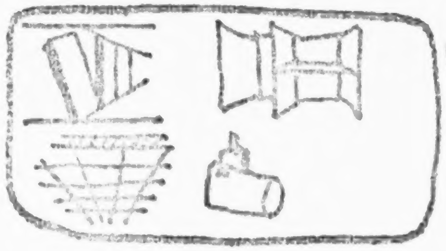
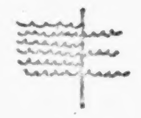
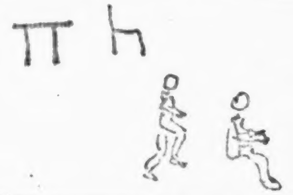
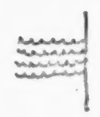
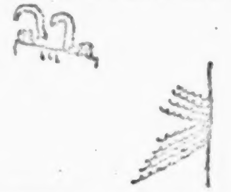
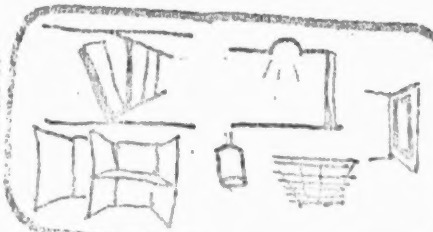
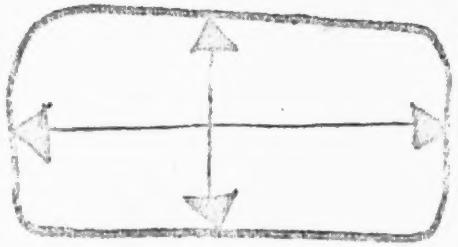
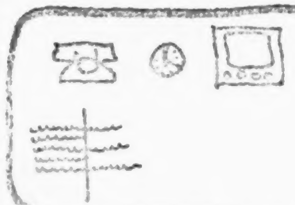

rolling refrigeration unit

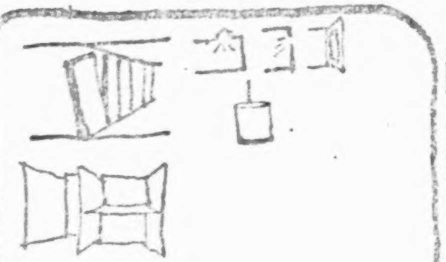
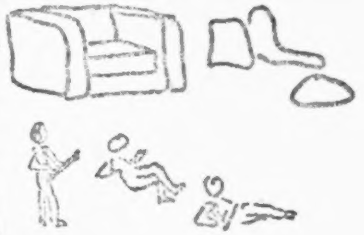
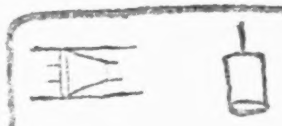
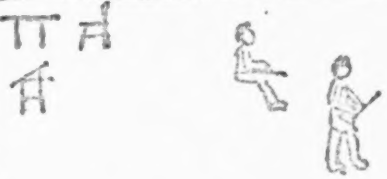
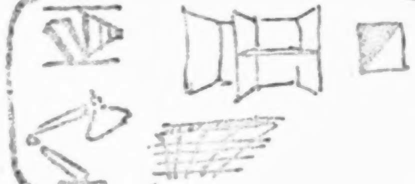
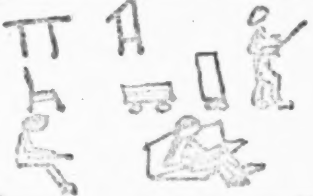

rolling sewing machine unit

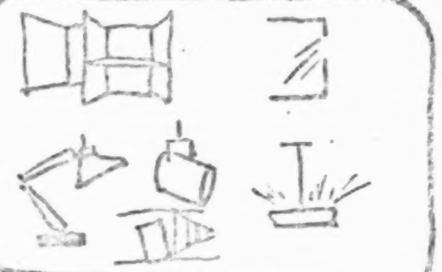
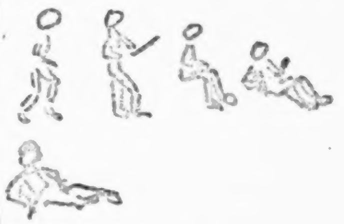
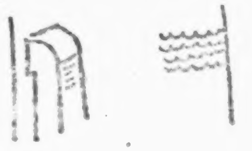
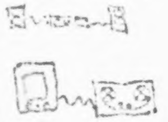
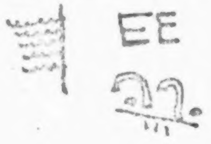
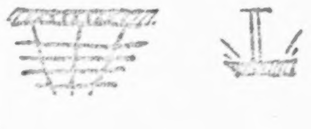
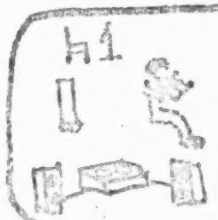
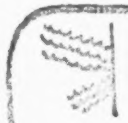
☎	telephone
📺	C.C.T.V.
⌨	computer terminal
📼	video tape
📻	record player, radio, tape deck
🕒	clock
EE	extra electric outlets
HVE	high voltage electric outlet
🚰	water supply
🔥	special gas supply
≋	special ventilation
✛	all listings appropriate to column
▨	studio
▨	workshop
▨	laboratory
✿	seminar/conference

4.4.1

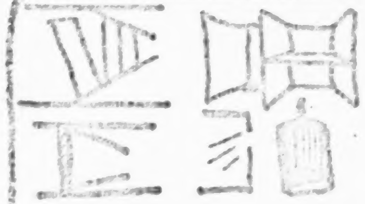
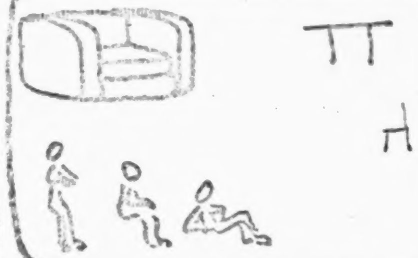
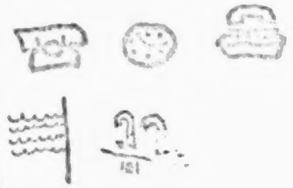
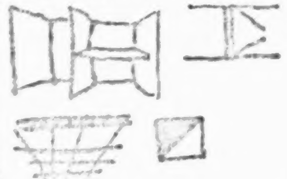
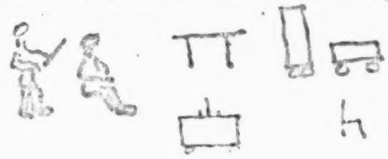
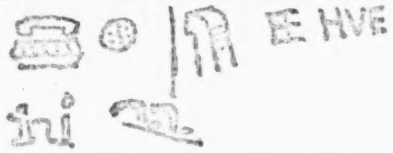
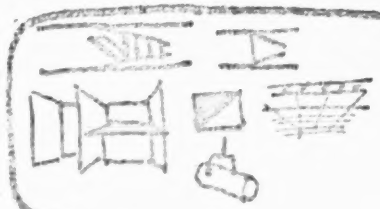
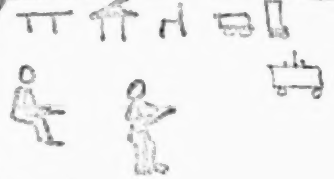
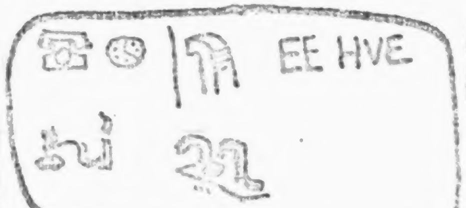
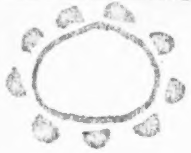
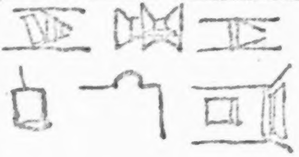
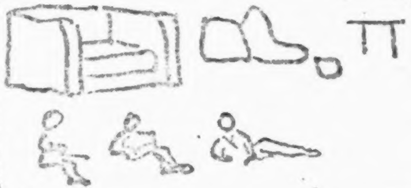
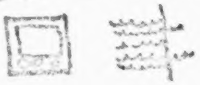
COMMUNICATION CENTER

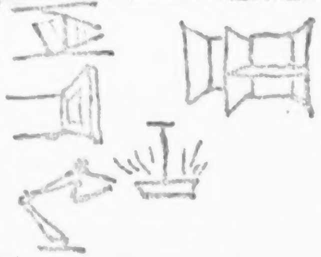
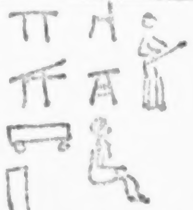
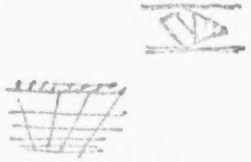
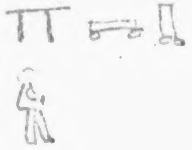
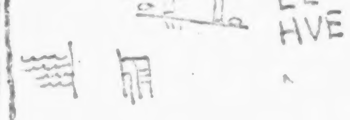
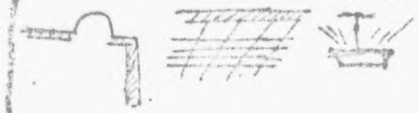
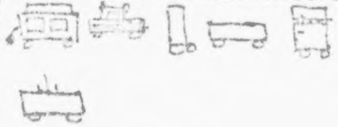
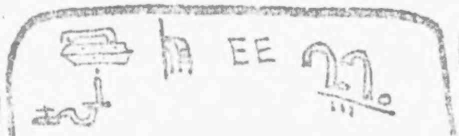
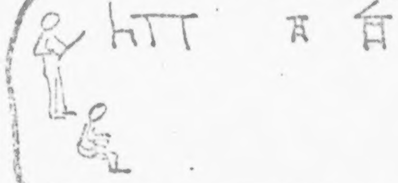
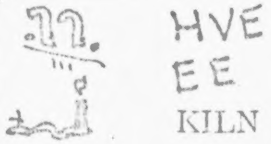
Space Category	Partitions and Lighting	Equipment, Furnishings, Postures	Services and Acoustics	□'/ Student X # Students = Total □' Range
Newspaper Production Photo Processing				100 x 10 = 1000
Newspaper and Other Writing			EE HVE 	30 x 50 = 1500
T.V. and cable communication to centers and community			EE HVE 	100 x 10 = 1000
T.V.	Special Lighting	T.V. Production Equipment	EE HVE 	3000 sq. ft.
Library and Resource Center (public)				25 x 200 = 5000 plus 20,000 sq. ft. for stacks and public

Space Category	Partitions and Lighting	Equipment, Furnishings, Postures	Services and Acoustics	□'/ Student X # Students = Total □' Range
	COMMUNICATION	CENTER		
4.4.1 Adjacent to resource center				25 x 150 =3750
Sound Dubbing				50 x 4 = 200
4-51 Viewing and production of A.V. materials Includes layout.			EE	80 x 20 = 1300 Storage: 1000
Early Childhood Care Stage I				15,000 - 20,000 sq. for 150-200 student
				Total Square Feet 32,750 - 37,750

Space Category	and Lighting	Furnishings, Postures	and Acoustics	X # Students = Total □' Range
4.4.2	FINE ARTS and PERFORMING CENTER			
Painting-Sculpting All four studios should be capable of being opened for use as one continuous space				100 x 30 = 3,000 2 areas x 3000 =6,00
Dance, with viewing or auxiliary dance balcony	None except for exterior, one exterior wall should be removable	Mirrors, rails. 		100 x 30 = 3,000
4-55 Music Must be capable of being used in various horizontal and vertical relationships				2 areas @ 2000 = 4,00
Drama				6000 sq. ft.
				25 x 15 - 375 6 areas x 375 = 2,250
Performance Hall				100,000 sq. ft. Total 121,250

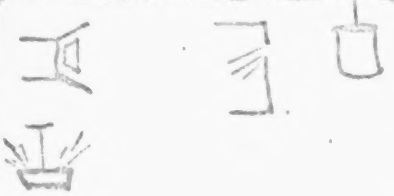
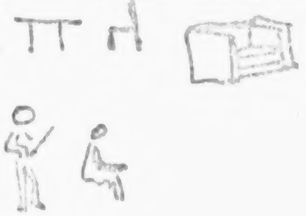
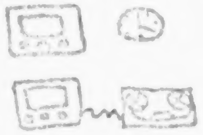
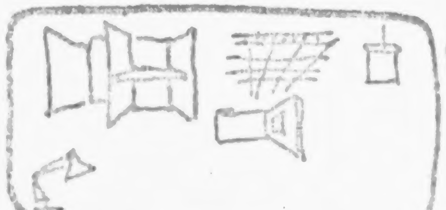
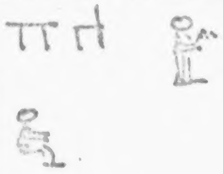
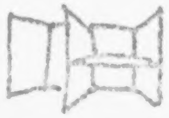
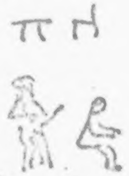
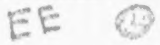
4.4.3 SCIENCE AND HEALTH CENTER

Space Category	an Lighting	Fu hing Postures	an Acoustics	= Total □' Range
Health Clinic Reception office Medical Dental Psychiatric				5,000 sq. ft.
4-56 Chemistry Biology Serves clinic and also is demo lab for students				1,000 sq. ft.
 Student project laboratory Individual or group projects Long range experiments				100 x 100 = 10,000
 Opens onto or adjoins labs				25 x 15 = 375 5 areas x 375 = 1
Early Childhood Care Stage I Observation lab for secondary students				7,000 - 10,000 sq
				Total 24,825 - 27,825

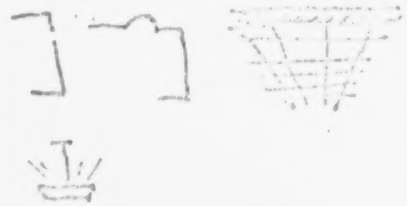
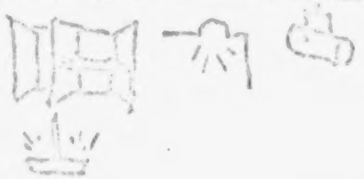
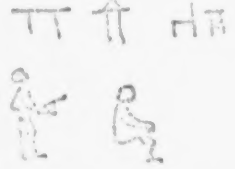
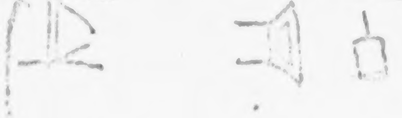
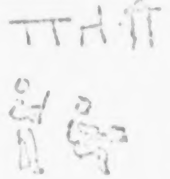
Space Category	and Lighting	Furnishings, Postures	and Acoustics	X # Students = Total □' Range
4.4.4	SOCIAL ENVIRONMENTS CENTER			
Construction of models for testing, maps, landscape city planning, urban design areas for long range projects				50 x 30 = 6,000
Housing technology (trade skills) Long term construction projects full wall access to outside				10,000 sq. ft.
1-57				25 x 15 = 375 5 areas x 375 = 18
Home Arts demonstration				1,000 sq. ft.
Crafts/ silver clay sew				6,000 sq. ft.

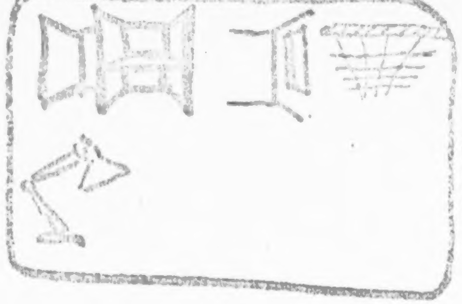
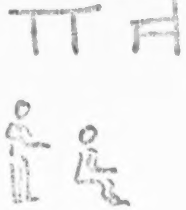
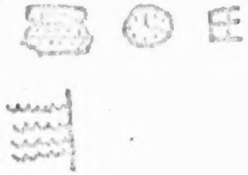
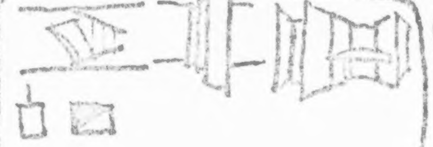
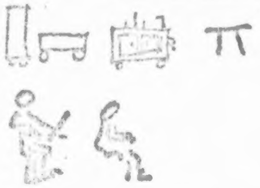
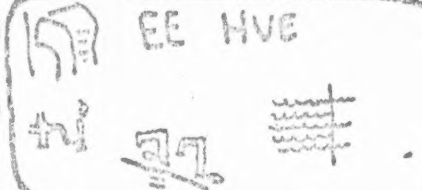
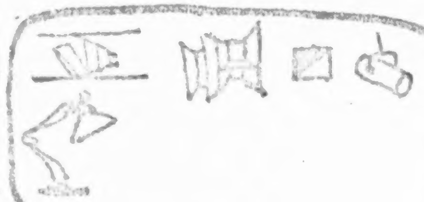
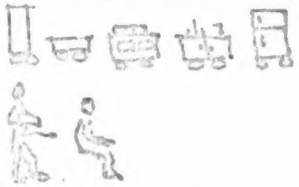
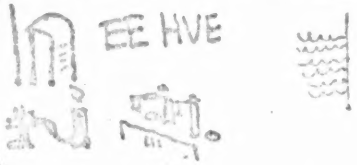
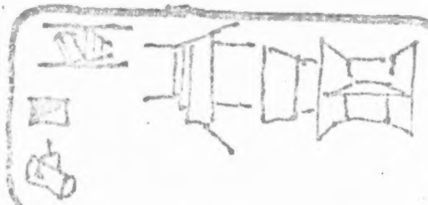
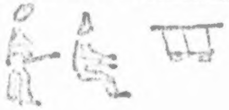
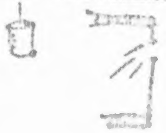
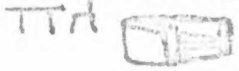
4, 4, 5

ECONOMICS AND BUSINESS MANAGEMENT CENTER

Space Category	and Lighting	Furnishings, Postures	and Acoustics	X # Students = Total ☐' Range
Seminar				25 x 15 = 375 375 x 6 = 2,250
Data Processing				50 x 40 = 2,000
Business Machines				50 x 40 = 2,000
Early Childhood Care Stage I				15,000 - 20,000
Commercial space (includes outlet for social environments center craft work				(10,000) not included in tot
				Total 26,250

4-58

Category	and Lighting	Furnishings Postures	and Acoustics	X [illegible] = Total [illegible]
ENGINEERING, TRANSPORTATION and TECHNOLOGY CENTER				
Auto Shop Should be adjacent to commercial cooperating service station.			EE HVE AIR Pow?	200 x 18 = 360
Model making Traffic & Highway design Engineering of transport systems				40 x 100 = 4,000
Transportation and Engineering Seminars				25 x 15 = 375 6 areas x 375 =
Monitor transport system Access to computer for schedule coordination with D. C. transport				125 x 8 = 1000
Commercial service station and transport system repairs				(12,000 sq. ft) not included in

Category		and Lighting	Furnishings, Postures	and Acoustics	X # Students = Total ▭' Range
4.4.6		ENGINEERING, TRANSPORTATION and TECHNOLOGY CENTER			
	Central Computer				2,000 sq. ft.
	Physics demonstration				50 x 30 = 1500
	Electronics and Physics projects area where student experiments can be left set up for weeks or longer if necessary				100 x 100 = 10,000
	Electronics Demonstration				50 x 30 = 1500
	Electronics, Physics Seminar				25 x 15 = 375 6 areas x 375 = 22
					Total 28,100

Space Category	Partitions and Lighting	Equipment, Furnishings, Postures	Services and Acoustics	□'/Student X # Students = Total □' Range
4.4.7	PHYSICAL RECREATION			
Basket ball courts				7,000
Weight lifting				2,500
4-61 Gymnastics				10,800
Personal defense wrestling boxing Judo				3,200
Squash				2,250
Handball				1,600

Space Category	Partitions and Lighting	Equipment, Furnishings, Postures	Services and Acoustics	□'/student X # Students = Total □' Range
4.4.	PHYSICAL RECREATION			
Simulated outdoor area for indoor track tennis				50,000
Indoor pool				20,000
4-62 Outdoor playing fields				400,000 sq. ft. (not included in total)
				Total 97,350

4.4.8 DECENTRALIZED TURF FOR ALL STUDENTS AND STAFF

2,800 work stations @ 250 sq. ft. = 70,000 sq. ft.

(See document on construction phasing for locations)

Meeting and eating areas for the secondary school population

will be located with groups of work stations. 45,000

Total: 125,000 sq. ft.

4.4.9 SQUARE FOOT SUMMARY OF EDUCATIONAL FACILITIES

SIX ELEMENTARY AND EARLY CHILDHOOD CARE FACILITIES AT 120,000 SQ. FT.		720,000
COMMUNICATION CENTER AND EARLY CHILHOOD CARE		
Lab for newspaper and photo production	1,000	
Workshop for writers	1,500	
Lab to monitor T.V. or cable to community	1,000	
Studio for T.V., film, radio production	3,000	
Library and media resource center (semi-public)	5,000	
Seminar space	3,750	
Studio for sound dubbing	200	
Workshop for production and viewing of A.V. material	1,300	
Storage for media raw material	1,000	
Early childhood care	20,000	
		37,750
SCIENCE AND HEALTH CENTER WITH EARLY CHILDHOOD CARE		
Medical, dental, psychiatric clinic	5,000	
Lab - chemistry, biology services clinic and as student demonstration lab	1,000	
Lab for student projects, long-range experiments	10,000	
Seminar	1,825	
Early childhood care	10,000	
		27,825
ENGINEERING, TRANSPORTATION, AND TECHNOLOGY CENTER		
Lab for engine mechanics	3,600	
Commercial service station and transit repair station	(12,000)	
Seminar	4,500	
Lab to monitor transit system, route planning	1,000	
Workshop to house central computer	2,000	
Lab for physics demonstration	1,500	
Lab for electronics demonstration	1,500	
Lab for student projects	10,000	
Studio - model making, traffic and transport design	4,000	
		28,100

4.4.9 SQUARE FOOT SUMMARY OF EDUCATIONAL FACILITIES (continued)

FINE ARTS AND PERFORMING ARTS CENTER		
Studio - painting, sculpting	6,000	
Studio - dance	3,000	
Studio - music	4,000	
Studio - drama	6,000	
Seminar	2,250	
Performance hall	21,250	
		42,500
SOCIAL ENVIRONMENTS CENTER WITH EARLY CHILDHOOD CARE		
Studio - models, maps, urban design, planning	6,000	
Workshop - housing technology & trade skills	10,000	
Seminar	1,875	
Home arts demonstration	1,000	
Workshop for crafts	6,000	
Early childhood care	9,000	
		33,875
ECONOMICS, BUSINESS, GOVERNMENT, AND MANAGEMENT CENTER WITH EARLY CHILDHOOD CARE		
Seminar	2,625	
Workshop for computer skills	2,000	
Workshop for secretarial, clerical skills	2,000	
Commercial, governmental space	10,000	
Early childhood care	20,000	
		36,625
DECENTRALIZED TURF AREAS		125,000
EARLY CHILDHOOD CARE IN HOUSING UNITS		20,000
PHYSICAL RECREATION CENTERS		97,350
TOTAL EDUCATIONAL SQUARE FOOTAGE		1,169,025

5. ORGANIZATION

5.1 Introduction

The Administrative Procedures for the Fort Lincoln Schools were developed for use by staff in administering the First Facility. The report describes such things as responsibility, authority, information flow, and inputs and outputs required to begin operating the school.

Following is a brief discussion of one of the major organizational needs which must be satisfied for the secondary level -- overall staffing.

5.2 Staffing

The concept of differentiated staffing and the minimization of hierarchy designed for the First Facility should be maintained for the secondary program. As in the First Facility program, the concern must be for support services on a centralized basis where essential. The task force approach to problem solving as well as the use of representative committees for centralized concerns should be maintained in order to foster communication across the entire program.

The staffing concept for the Fort Lincoln secondary school is basically the same as that which was extensively described in the Organization/Staffing Plan for the First Facility. The key elements of those earlier recommendations were the notion that all staff relationships should be collegial rather than hierarchical; that teams should work out among themselves the procedures and practices necessary to fulfill their functions; that leadership should be evolutionary and rotating -- decisions are to be made by the person or people most qualified to make them at the time they must be made, that decision making should always take place on the level closest to the primary purpose of the school -- instruction; that students should participate in decision making affecting their activities; that curriculum development and evaluation is a part of every teacher's responsibility; and that all staff members assume responsibility for continuing their own professional development.

Also, at the secondary school level the notion that staff includes all those individuals who can make a contribution to the educational program and to students, in whatever capacity they may serve, rather than being limited to full-time, certified personnel takes on an added urgency. The fact that the editor of the Sunday magazine for The Washington Post does not have a teaching license should not exclude him from conducting a course for Fort Lincoln students who are interested in feature writing and the workings of a newspaper. Having 24 paper credits on a transcript which verify that the editor passed through courses on tests and measurement, the history of education, the philosophy of education, and adolescent psychology can hardly be equated with the subject matter grasp, the actual work experience, and professional insights he would be able to offer students. This is not to suggest that any man on the street will be allowed or requested to teach courses at Fort Lincoln. Like all staff members he would have to go through a screening process conducted by a committee -- including students -- to review his potential contribution to the Fort Lincoln system.

Some of the essential criteria for selection which should be applied to prospective staff members for the secondary school are again similar to those for the elementary school: an interest in and commitment to working with students, openness to change or adaptability to changing requirements, an ability to tolerate high levels of ambiguity and to maintain personal stability in conflict situations, subject matter strengths, adaptiveness to team effort, and leadership and development potential. The profile of the ideal high school teacher which emerged from nationwide student sampling in the Harris poll indicated that he should be "young, have a sense of humor, listen and understand students' problems, not go by the book, encourage discussion and participation, treat students like grown-ups, give them responsibility, be fr[illegible] and open and interested in student." The essential task in developing "selection criteria" for the Fort Lincoln staff is to attempt to translate that type of desirable profile into a measurable commodity. It also provides the strongest reason for having students participate in the selection and evaluation of staff members.

5.2.1 Staff and Student Relationships

As in the First Facility, the principal mode of operation for the staff of the Fort Lincoln secondary school will be teams. Within a team, all members will share responsibility and accountability for the successful performance of the functions peculiar to the team's existence. Notwithstanding the wisdom of the old saying that an elephant is a horse put together by a committee, GLC strongly advocates the team concept for Fort Lincoln for several reasons. Like most mortals, teachers have their strengths and weaknesses, their assets and their liabilities. To have one teacher or several teachers acting separately in relationship to students or curriculum is unfair to the student, the program, and the teacher. The team approach to school operations does not reduce the importance or the value of the individuality of staff members. It does help to guarantee a perspective and dimension to decision making that reflect the combined strengths of individuals and the cancelling out or compensation for individual weaknesses. Also, it is becoming clear that in the solution of the increasingly complex problems characterizing this stage of the country's development, society must depend more and more upon the ability of men to cooperate in teams (e.g., space exploration). Yet schools continue to separate teachers and to have them competing with each other rather than practicing the cooperative ways of behavior essential to meeting the exigencies of contemporary life. The success of the team arrangement is of course contingent upon the strength of peer relationships within the group, maintenance of positive self-perceived group standards, and the problem-solving skills of team members. It is expected that in most cases these factors will lead to resolving group conflicts and to team members assuming or assigning accountability for specific activities. It is not expected, however, that teams will initially and automatically function smoothly. In many ways, it is more difficult or demanding to work with others than it is to work alone until one has experienced the rewards and the benefits as well as the frustrations of joint efforts. As in the recommendations regarding in-service training for the First Facility, assistance and direction in group process methods both should be provided to the secondary school staff before and after the school begins to operate.

There will be four principal team structures at work in the Fort Lincoln secondary school:

- the Student Unit Team
- the Learning Center Team
- the Satellite Team
- the Coordinating Team

The first two teams are directly concerned with the emotional, social, and intellectual development of the students; the latter two serve in support and governing roles to these processes.

5.2.1.1 Student Unit Teams

Student units represent the basic organizational structure for students. Approximately 150 students, heterogeneously grouped (age, sex, aptitude, academic or vocational interests), comprise a student unit. Each student unit has a home base, i.e., space in a learning center or community facility which is its headquarters. Each unit is further broken down into groups of 15 students, led by a teacher and an intern or paraprofessional. It is within the student unit that the counseling, guidance, course determination, individual scheduling of activities, evaluative exercises, social functions, and student management activities are developed and monitored.

Within a projected student population of 2,500, the organization into units and sub-unit allows a sense of intimacy, community, individual identity, and the opportunity for participatory democracy that is sacrificed in most urban or large high schools.

Each staff member assigned to a student unit will be responsible for the progress and development of 30 students (i.e., two sub-units). Accordingly, approximately five teachers and five interns or paraprofessionals will comprise a student unit staff team. The staff team along with the students will set the policies and procedures for operation of that particular student unit (e.g., dress code, attendance regulations, assignment and techniques of management responsibilities, evaluation methods, etc.).

All staff members assigned to the student unit will be responsible for the total operation and success of the unit, not only their sub-units. All staff members will also have regular instructional and/or administrative responsibilities in one or several of the learning centers. The student unit staff team will elect a team leader to act as its representative in all other convening bodies on a school-wide basis.

5.2.1.2 Learning Center Teams

As described in Section 2.2 of this report the educational program for the secondary school is to be organized around the Learning Center Concept. It was recommended that the curriculum could be classified or categorized into seven areas or "Centers" of learning:

- Communications
- Economics and Business
- Social Environments
- Science and Health
- Engineering and Technology
- Fine and Performing Arts
- Physical Recreation

All full-time staff members who are hired for the secondary program should be assigned to one of these Centers based on their subject matter specialty. Assignment to one Center would not preclude their performing instructional duties within other Centers. For example, a literature teacher would most likely be assigned to the Communications Center and spend the best part of his time in courses offered by that Center; however, he may be requested or offer to teach a course in another Center using literature as the resource in order to understand social problems, scientific theories, etc. All staff assigned to a particular center will make up the Learning Center Team. The Team will include teachers, paraprofessionals, volunteers, interns, and community resource instructors. Each of the Learning Centers will have a Director hired for that position. The Center Team would plan, implement, and evaluate effective instructional programs for each student enrolled in courses or activities related to the specialities of the Center. Under the leadership of the Center Director, the Team would organize itself so that it carries out the basic functions of all Centers: instruction, curriculum development, evaluation, administration, and staff development. For example, the Team may decide that several staff members will spend two-thirds of their time on curriculum development and one-third on teaching; one may play the role of Center staff development director, etc.

Prior to the opening of school (and thereafter before each semester or trimester) the Center Teams will have developed course offerings which can be anticipated as required for certain life simulation choices (e.g., algebra, biology, cosmetology, French, etc.), and these course offerings should be used as the working document for the student units to review, discuss, alter, expand, etc. Each unit will feedback the course preferences, requests, etc. of its students to Center teams for development and scheduling. The Coordinating Team (see following discussion) will put together a master schedule and resolve conflicts on use of facilities and personnel resources. The Center Teams will be responsible for recruiting or locating community resource instructors and meeting places for courses which cannot be handled by regular staff or volunteers.

5.2.1.3 Satellite Team

The central functions of the secondary program will be handled by the Student Unit and Learning Center Teams, i.e., instruction, curriculum development and planning, evaluation, student counseling, student participation, or management activities. However, these Teams will require a certain amount of support services. The staff members providing these services will make up the Satellite Team:

- An administrative coordinator, responsible for overall budgeting, purchasing, accounting, transportation, etc.
- A group of counselors who will work primarily with the student unit staff in developing ways of dealing with the personal and career needs of the students;
- A community and public relations coordinator who will handle all public information on the school, visitors to the school, orientation programs for students and faculty, higher level negotiations with community resources of potential value to the instructional process, etc.;
- Various administrative or secretarial personnel, maintenance staff, and food services staff.

5.2.1.4 Coordinating Team

The decentralization and dispersion of authority, leadership, and responsibility recommended for staff operations throughout the Fort Lincoln system should obviate the need for a principal of the secondary school in the usual sense of a day-to-day administrator of the school. Nevertheless, the need remains for a "court of last resort," an arbitration forum, a central communications "repository." The Coordinating Team is recommended as the means of meeting these needs of the institution. The Team would be made up of student unit leaders, Center Directors, the Administrative Coordinator, the head counselor, and a student from each of the units. The Team would normally function in a coordinating, experience-sharing and problem-solving capacity. They would also establish any necessary school-wide policies, deal with problems arising from those policies, and maintain reporting and accountability liaison with the central office of the school system.

A diagram of the staff teams may be found on the following page.

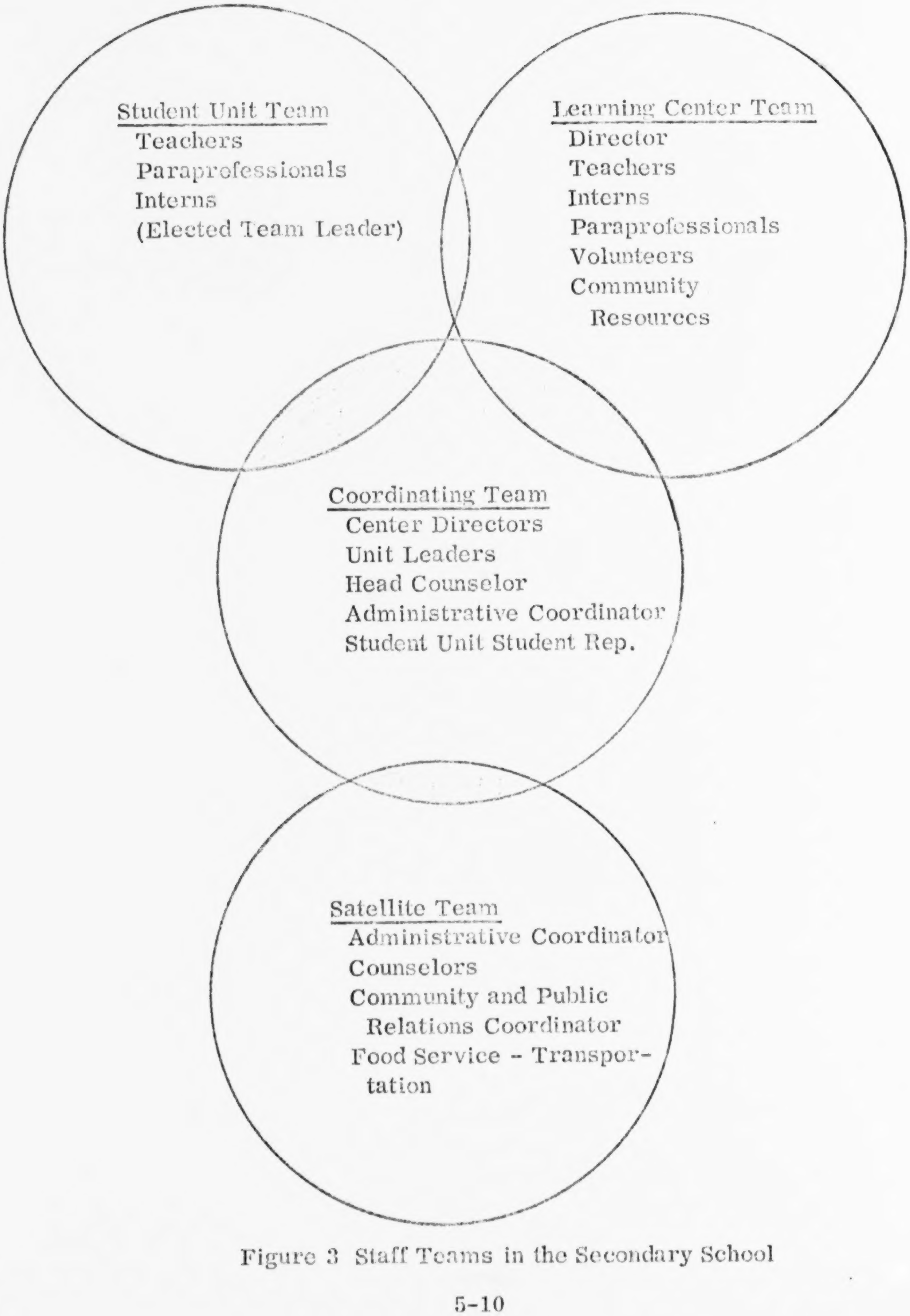

Student Unit Team
Teachers
Paraprofessionals
Interns
(Elected Team Leader)
Learning Center Team
Director
Teachers
Interns
Paraprofessionals
Volunteers
Community Resources
Coordinating Team
Center Directors
Unit Leaders
Head Counselor
Administrative Coordinator
Student Unit Student Rep.
Satellite Team
Administrative Coordinator
Counselors
Community and Public Relations Coordinator
Food Service - Transportation

Figure 3 Staff Teams in the Secondary School

5.3 Staff/Student Ratios

The projected enrollment for the Fort Lincoln secondary school is 1,420 students in "grades seven through nine" and 1,147 students in "grades ten through 12."

The aim of the Education Program recommended for these students is to be highly responsive to changing student needs and interests, i.e., to provide learning opportunities which will serve to:

- Facilitate a student's preparation for the society and organization he will enter when he completes his formal education.
- Assist him in an examination of life alternatives in terms of his inner structure of motivation, character, attitudes, and goals.
- Help him establish a sense of personal identity and ease in self-expression.

Features of the Education Program considered to be essential to achieve these aims include:

- A nongraded system of student placement
- An individualized instructional program
- The use of self-instructional materials
- The use of performance objectives as a basis for curriculum design and student evaluation
- The direct use of community resources in the instructional process.
- The participation of students in all aspects of the school's

operations and decision making as well as in determining their own choice of educational experiences.

No quick and ready formula exists to determine the exact number of staff required to implement this Educational Plan for 2,500 students. In the program design for the First Facility, the organization of children based on age and developmental needs, the availability of a wide range of self-instructional materials, and the existence of an extensive array of performance objectives in the basic skill areas all contributed to the recommendation for a lower staff/student ratio than has come to be currently recommended for a traditional elementary school. In contrast, a higher staff/student ratio is recommended for the secondary school, based on consideration of the goals of the Education Plan and the following additional factors:

- The amount of personal and career counseling that is inherent in a system based on the life simulation concept of the education program.
- The amount of time and effort which the staff will have to apply to the development and refinement of performance objectives for specific course offerings and terminal objectives for streams of study.
- The advisability of combining the teacher-counselor roles.
- The goal of achieving a sense of intimacy, self-determination, and participatory democracy within the school community.

Thus, a numbers plan is recommended for the secondary staff as follows:

Center Directors	7
Teachers	85
Paraprofessionals	65
Counselors	5
Interns (graduate and undergraduate)	35
Administrative or support professionals	4

This recommendation was reached by analyzing the staffing demands posed by the application of the student unit concept, which is essential to meet the philosophical goals of the program, and the offering of a wide variety of courses and activities.

As described previously, a teacher assisted by an intern or paraprofessional will bear responsibility for each sub-unit of students (15 students). The 2,500 student population breaks down into 170 sub-units (17 student units). Consideration of this factor alone could result in a recommendation for 170 teachers and 170 interns and paraprofessionals. However, it is important to reconsider this number in light of the time demands on the staff of the student unit meetings and the staff requirements for the courses offered. Sub-units will convene with their staff leaders for 1 1/2 hours two times a week. The entire student unit will convene for one hour a week. Thus, one teacher and one assistant will devote three hours of direct or scheduled time to each sub-unit and approximately three hours for activities related to the functioning of the units: preparation, individual consultations, follow-through on personal problems or course difficulties, liaison with centers on behalf of students, recordkeeping, etc. If teacher and assistant would handle two sub-units (i.e., 30 students separately, only 85 teachers and 85 paraprofessionals and interns would be needed to meet the operating goals of the student units. Devotion to student unit activities would therefore consume 13 hours of the 37 1/2 hour staff work week.

Using the 85 staff figure derived from an analysis of the student unit operations, we then estimated how much time each of these teachers could apply to direct instructional activities. If each teacher taught two courses (or sections thereof) a week for a total of 10 hours, this would leave 14 1/2 hours in the schedule for application to curriculum development, monitoring of individual study projects, team meetings, staff development, etc., and would mean that regular full-time staff could cover 170 course offerings. If each of the interns recommended (35) would also assume responsibility for teaching one course a week, under the guidance and help of the Center Team, approximately 205 course offerings or sections thereof would be available to students. From an examination of the numbers of courses offered in some of the innovative schools described in Appendices A and B of this report (Nova, Evanston, Parkway), 205 courses to be taught by the regular staff appears ample. This is especially true since there is an assumption that an unlimited number of course offerings will be available from community institutions, businesses, and organizations. All of the interns will assist the teachers in the leadership of a student sub-unit. The balance of the assistant leadership positions for these units (50) will be handled by paraprofessionals. A total of 65 paraprofessionals has been recommended to assume a large amount of the administrative and record-keeping responsibilities of the professional staff as well as to assist in leading the student sub-units. Like teachers, paraprofessionals will also be assigned to Learning Centers and be part of those Center Teams.

The number of Center Directors obviously is based upon the number of Centers recommended for the education program -- seven. Since the counseling role has been incorporated into the teacher's role, only five professional counselors are recommended for the school. Their primary responsibility will be to support the staff members in leading sub-units and to handle directly only those students referred specifically to them for special reasons.

In addition to the use of as many community resources as possible in the instructional offerings of the school, it is also recommended that secondary school teachers in the rest of the D. C. School System be allowed released time to participate in the Fort Lincoln program. Their activities at the Fort Lincoln School could include participation in curriculum development or evaluation, writing performance objectives, and teaching a course in their specialty field. Their participation would be considered a staff development exercise for them and hopefully would result in dissemination of some of the innovations of the Fort Lincoln Education Plan to already existing schools around the city.

6. COMMUNITY PARTICIPATION

General Learning Corporation's relationship with the Fort Lincoln community began in December of 1968. The Fort Lincoln Citizens Advisory Council was officially designated as the group to represent Fort Lincoln area residents in future planning for the site.

GLC was selected by the Citizens Advisory Council, the Board of Education, and the D. C. Government to design a model school system for the Fort Lincoln area. This required a comprehensive scheme, including planning of facilities, curriculum, administrative organization and procedures, staff patterns, and community participation.

The community plan called for close cooperation between GLC planners and community residents. To ensure participation, some sixty community organizations, under the auspices of the Fort Lincoln Advisory Council, were invited to the workshop sessions. Representatives of these organizations designed, with GLC and Board of Education technical assistance, a plan for the governance of the semi-autonomous school system and additional education programs to support on-going school programs. Group planning was accomplished on a volunteer basis.

Prior to July 1969, Special Projects Division with the technical assistance of the General Learning Corporation, developed a Community Participation Plan. The key elements of the Plan were grouped into two broad categories, governance and school programs.

- Community Governance:
  - Alternative structures for governance of both the elementary and secondary schools

- Interim Education Committee and/or Community Board which has shared authority and responsibility for: Personnel, Materials and Supplies, Budget, Administration, Curriculum, Organization, Liaison, and Mambership.
- Parent and citizen involvement on all levels within the projected school system, i.e., Community Board, subcommittees on personnel, budget, etc.
- Student participation in the design and operation of the schools.
- D. C. School System involvement in the operation of the schools.
- Assembled resources for appropriate use in the schools.

- School Programs:
  - Community education programs such as: Learning Reinforcement Program, Reading Assistant Program, Adult Education Program, Tutorial Program, Fund Raising Program, Student-Teacher Program, Community Services Program, and a Satellite Learning Center Program.

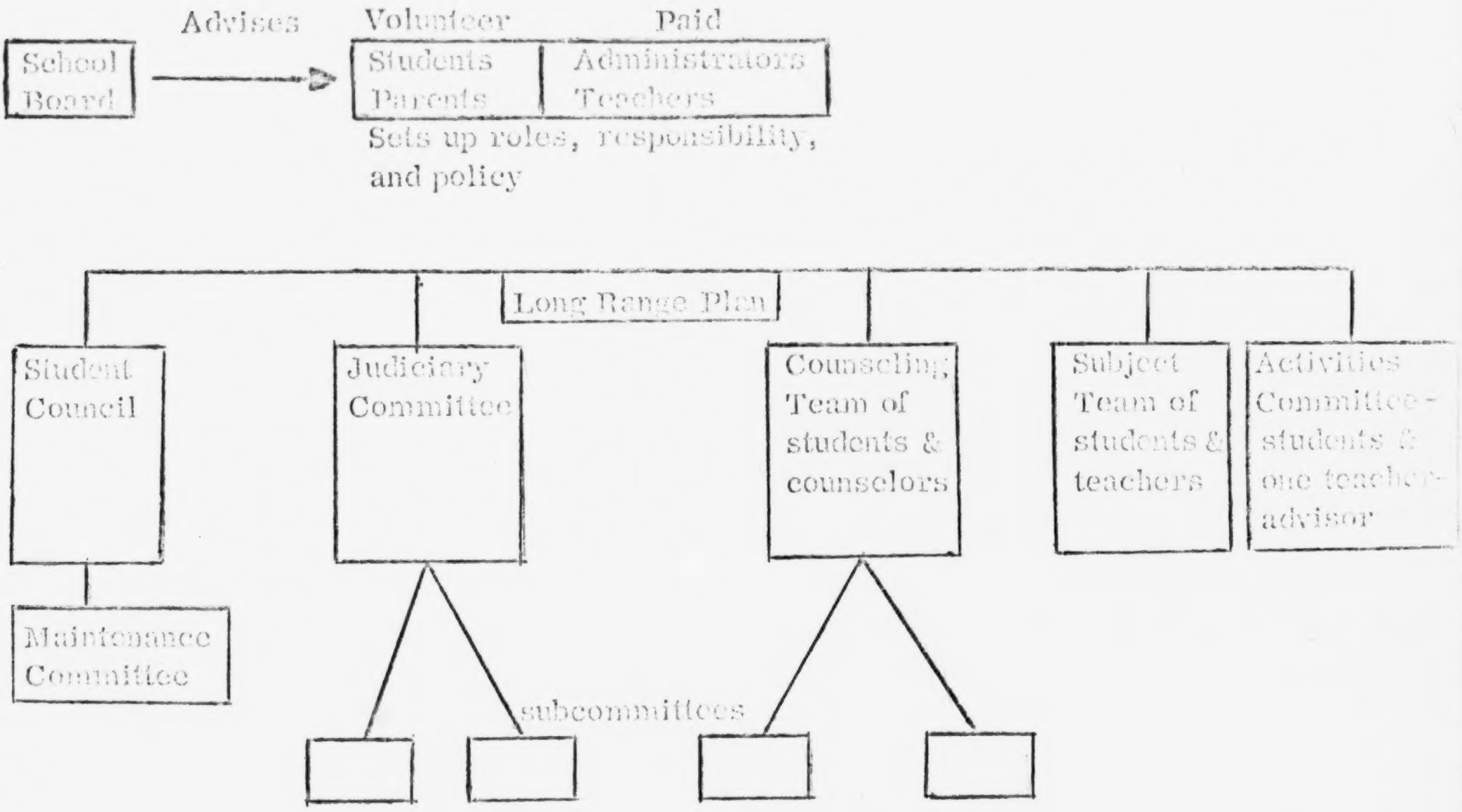
Those areas left for further exploration on the part of the Fort Lincoln community would seem to be the additional programs needed for secondary schools. For example, new programs may be needed in secondary student services.

One new kind of community participation that immediately comes to mind when thinking of the secondary program is that of a work experience advisory function. As we indicate throughout this document, students in various programs will participate in various real-life experiences. Activities like this require extensive examination of community resources and the specific role of community personnel.

The role of the Fort Lincoln community in the schools is fairly well outlined in the First Facility plan. Again, there may be other programs which will be needed to make further use of existing resources in the area. The various school boards or councils, P.T.A.'s, budget committees, etc., could be used to facilitate the planning of such programs.

The role of secondary students perhaps requires further expansion in the numbers of students who will sit on the school board in a decision-making capacity. There also may be a need to plan a student governing body which attends to student affairs on a day-to-day basis. This notion may also require additional funding.

During the student seminar, one group developed a model for the relationship among students, administrators, parents, and teachers in governing a school. A discussion of the model appears in Appendix G.


Advises
Volunteer
Paid
School Board
Students
Parents
Administrators
Teachers
Sets up roles, responsibility, and policy
Long Range Plan
Student Council
Judiciary Committee
Counseling Team of students & counselors
Subject Team of students & teachers
Activities Committee - students & one teacher-advisor
Maintenance Committee
subcommittees

Any community planning which deals with as many as 10,000 students will inevitably develop problems which could not be projected while planning a single facility. However, the community plan, as conceived, possesses the necessary machinery and feedback procedures to absorb change. In the event that the overall school boards, P.T.A.'s, budget committees, teacher organizations, and student organizations are not able to handle a system-wide problem, a representative Congress of Organizations may be convened by the existing elected bodies concerned with educational affairs in Fort Lincoln.

7. SUMMARY

In order to take full advantage of all types of educational experiences provided by an urban environment, the Fort Lincoln secondary plan suggests a school that is innovative in concept and design. The school is not an institution separate from life as it exists in the surrounding community; rather, it is students, staff, and community members interacting and organizing available resources to meet their needs.

The resources which are available to students through the Fort Lincoln community have been grouped into seven centers. The centers are Communications, Fine and Performing Arts, Science and Health, Social Environments, Economics and Business Management, Engineering and Technology, and Physical Recreation. A Center may be comprised of a number of facilities throughout the town, as well as a variety of staff members and materials. Thus, in recognizing the wealth of opportunity existing in the urban community, the Center Concept evolves. It is a concept that creates unique roles for students, staff, and community members.

A student at Fort Lincoln is encouraged to explore and to develop to the fullest those interests and talents he and his teachers identify. He is asked to participate in school operations, curriculum design, staff evaluation, and extra curricular activities. Most important of all, he is largely responsible for the decisions that effect him. He has the freedom, mobility, and flexibility to pursue studies ranging from on-the-job experience to small group seminars.

The roles of staff members at Fort Lincoln distinguish them from their counterparts in traditional schools. Teachers are involved in curriculum development, counseling, and identification of materials and resources. Staff roles are differentiated and staff relationships are collegial rather than hierarchical. Having eliminated the role of the principal, the school is operated by a series of teams which evolve as educational and administrative needs arise. These teams will involve students, parents, and community members as well.

Community members are depended upon to serve a variety of functions in the school. They are asked to participate as volunteers, as job counselors, as teachers, and as assistants in development of the curriculum.

Increased communication among all members of the school community will stimulate interest in one another and will create an environment where people are appreciative of and responsive to the needs of others. Whether they are parents, businessmen, students, government employees, teachers, or mechanics, their concern and involvement with Fort Lincoln students will produce a school and a curriculum that is relevant to the current needs of the entire community.